GS3000

8 Buss in-line
Recording console

ALLEN & HEATH

USER GUIDE

PUBLICATION: AP3266

LIMITED ONE YEAR WARRANTY

This product has been manufactured in the UK by ALLEN & HEATH and is warranted to be free from defects in materials or workmanship for period of one year from the date of purchase by the original owner.

To ensure a high level of performance and reliability for which this equipment has been designed and manufactured, read this User Guide before operating.

In the event of a failure, notify and return the defective unit to ALLEN & HEATH or its authorised agent as soon as possible for repair under warranty subject to the following conditions:

CONDITIONS OF WARRANTY

1. The equipment has been installed and operated in accordance with the instructions in this User Guide.
2. The equipment has not been subject to misuse either intended or accidental, neglect, or alteration other than as described in the User Guide or Service Manual, or approved by ALLEN & HEATH.
3. Any necessary adjustment, alteration or repair has been carried out by ALLEN & HEATH or its authorised agent.
4. The defective unit is to be returned carriage prepaid to ALLEN & HEATH or its authorised agent with proof of purchase.
5. Units returned should be packed to avoid transit damage.

These terms of warranty apply to UK sales. In other territories the terms may vary according to legal requirements. Check with your ALLEN & HEATH agent for any additional warranty which may apply.

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CE

This product complies with the European Electromagnetic Compatibility Directives 89/336/EEC & 92/31EEC and the European Low Voltage Directives 73/23/EEC & 93/68EEC

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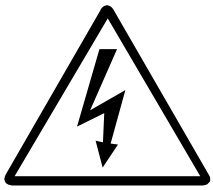
INTRODUCTION

The **GS3000** continues ALLEN & HEATH's commitment to provide high quality audio mixing consoles engineered to meet the exacting requirements of today's audio business. It brings you the latest in high performance technology and offers the reassurance of over two decades of console manufacture and customer support.
This user guide presents a quick reference to the function and application of the **GS3000**. We recommend that you read this guide fully before starting. For further information on the basic principles of recording and audio system engineering, please refer to one of the specialist publications available from book shops and audio equipment dealers.
Whilst we believe the information in this guide to be reliable, we do not assume responsibility for inaccuracies. We also reserve the right to make changes in the interest of further product development.

SERVICE AND TECHNICAL SUPPORT

We are able to offer further product support through our world-wide network of approved dealers and service agents. You can also access our Web site on the internet for information on our product range, assistance with your technical queries or simply to chat about audio matters. To help us provide the most efficient service please keep a record of the console serial number, and date and place of purchase to be quoted in any communication regarding this product.

SAFETY WARNING!



Mains electricity is dangerous and can kill. Mains voltage is present within the console power supply.
Do not remove the power supply cover with mains electricity connected. To ensure your safety, mains earth is connected to the chassis through the power lead. Do not remove this mains earth connection.
To avoid the risk of fire, replace the mains fuse only with the correct value and type as indicated on the power supply unit.

GENERAL PRECAUTIONS

Your **GS3000** is ruggedly constructed to give many years of reliable operation. However, you will extend the life of the console and preserve its cosmetics by applying these simple common sense precautions.
Avoid storing or using the mixing console in conditions of excessive heat or cold, or in positions where it is likely to be subject to vibration, dust, dirt or moisture. Do not use any liquids to clean the control surface of the console, a soft dry brush or dry lint-free cloth is ideal. Use only water or ethyl alcohol to clean the trim and scribble strips. Other solvents may cause damage to paint or plastic parts.
The faders, switches and potentiometers are lubricated for life. The use of electrical lubricants on these parts is not recommended.
Avoid using the console close to strong sources of electromagnetic radiation (e.g. video monitors, high power electric cabling): this may cause degradation of the audio quality due to induced voltages in connecting leads and chassis. For the same reason, always site the power supply away from the unit.

TRANSPORTING THE CONSOLE

The console is supplied in a strong carton. If it is necessary to move it any distance after installation it is recommended that this packing is used to protect it. Be sure to disconnect all cabling before moving the console. If the console is to be regularly moved we recommend that it is installed in a foamlined flightcase. At all times avoid applying excessive force to any knobs, switches or connectors.

KEY FEATURES OF THE GS3000

The **GS3000** recording console offers the professional user an abundance of features with impressive performance. It is built on the established tradition of innovative British design and manufacture. The **GS3000** is equally suited to home and studio recording. Features include:

- In-line architecture for up to 32 track recording
- 2 independent L-R mix busses
- 24 and 32 channel frames
- 52 and 68 inputs on mixdown
- 8 sub groups with mono and stereo sub-grouping and bargraph meters
- faders in monitor and channel paths
- 4 stereo input channels, 2 with full EQ and routing
- 2 patchable valve mic/guitar inputs channels with EQ on the guitar inputs
- 4 band EQ with fully parametric mids, splittable between monitor and channel paths
- 6 aux sends with extra stereo post-fade aux (XFX) feature for extra effects sends
- impedance balanced tape send and return on every I/O channel switchable between low level and high level (–10dBV/+4dBu)
- group/direct switching on every I/O channel
- LED indicator showing record ready status
- Extensive talkback facility
- 1kHz or 10kHz oscillator for signal set up
- 2 studio feeds with comprehensive source selection
- facility for connecting three 2-track recorders with full dubbing.
- solo-in-place and PFL on both channel paths
- MIDI mute automation with 128 snapshots
- 4 mute groups
- transport controls on console using MIDI machine control
- optional full length meterbridge with signal source switchable between channel or tape return

The console is constructed using extruded aluminium beams, steel panels and 3mm thick metal side plates. Individual circuit board assemblies are accessible by removal of the steel base. A durable soft front armrest is provided for comfort. Armrest, channel top and rear panel write-on strips are provided for channel marking. High quality reliable parts are used throughout. High performance op-amp and discrete circuits are used to ensure low noise and sonic purity.

The external power supply is a silent convection cooled unit that can be rack mounted or freestanding. The outputs are DC voltages with full protection against short circuit and over voltage.

INSTALLING THE CONSOLE

Whilst great care has been taken to ensure that installations are made as trouble-free as possible, care taken at this stage, followed by correct setting up will be rewarded by long life and reliable operation.

WIRING CONSIDERATIONS

Install separate mains outlets for the audio equipment, and feed these independently from any other equipment such as lighting, computer and kitchen equipment.

Avoid locating mains distribution boxes near audio equipment, especially tape recorders, which are very sensitive to electromagnetic fields.

Where possible ensure that all audio cable screens and signal earths are connected to ground only at their source.

Avoid running audio cables next to mains, computer or lighting cables, or near thyristor dimmer and power supply units. If unavoidable, cross these at right angles.

Use low impedance sources such as microphones rated at 200 ohms or less to reduce susceptibility to interference. The console outputs are designed to operate at very low impedance to minimise interference problems.

Use balanced connections where possible as these provide further immunity by cancelling out interference that may be picked up on long cable runs. To connect an unbalanced source to a balanced console input, link the - input (XLR pin 3 or the ring terminal of a TRS jack) to 0V earth (XLR pin 1 or the jack sleeve terminal) at the console. To connect a balanced console output to an unbalanced destination, link the - output to 0V earth at the console.

Use professional quality cables and connectors and check for correct wiring and reliable solder joints.

If you are not sure ... Have your system checked by a competent engineer, or contact your local Allen & Heath agent for advice.

EARTHING

The connection to earth (ground) in an audio system is important for two reasons:

1. **SAFETY** - To protect the operator from high voltage shock associated with the AC mains supply feeding the system, and

2. **OPTIMUM AUDIO PERFORMANCE** - To minimise the effect of earth (ground) loops which result in audible hum and buzz, and to shield the audio signals from interference.

For **safety** it is important that all equipment earths are connected to mains earth so that exposed metal parts are prevented from carrying high voltage which can injure or even kill the operator. It is recommended that the sound engineer check the continuity of the safety earth from all points in the system including microphone bodies, guitar strings, multicore cases, equipment panels, etc….

For **optimum audio performance** it is essential for the earthing system to be clean and noise free, as all signals are referenced to this earth. The same earth is also used to shield audio cables from external interference such as the hum fields associated with power transformers and electromagnetic radiation from computers. Problems arise when the signal sees more than one path to mains earth. An ‘earth loop’ (ground loop) results causing current to flow between the different earth paths. This condition is usually detected as a mains frequency (50/60Hz) audible hum or buzz.

To ensure safe and trouble-free operation we recommend the following:

A central point should be decided on for the main earth point, and all earths should be individually (‘star-fed') from this point.

For safety, the console chassis is connected to mains earth through the DC power cable and mains power cable. Audio 0V is connected to the console chassis internally. If problems are encountered with earth loops operate the audio ‘ground lift’ switches on connected equipment in accordance with the operating instructions, or disconnect the cable screens at one end, usually at the destination.

POWER SUPPLY

Refer to the SAFETY WARNING on page 3 of this User Guide. Read and understand the warnings and instructions printed on the rear panel of the power supply and reproduced here.

The power supply provided with the **GS3000** is the **RPS11** which is a linear supply and produces the DC voltages required by the console. Always use the correct power supply and cable with the console. The use of alternative supplies is not recommended and may cause damage. Check that the correct mains lead with moulded plug has been supplied with your power supply. Ensure that the IEC mains plug is pressed fully into the rear panel socket before switching on.

The extension of the DC power cable is not recommended and may result in the malfunction of the mixing console.

Before switching on your console, check that the mains voltage on the power supply unit is set to the correct mains voltage for your area, and that the fuse is of the correct rating and type. This is clearly marked on the rear panel of the power supply. Do not replace the fuse with any other type, as this could become a safety hazard and will void the warranty.

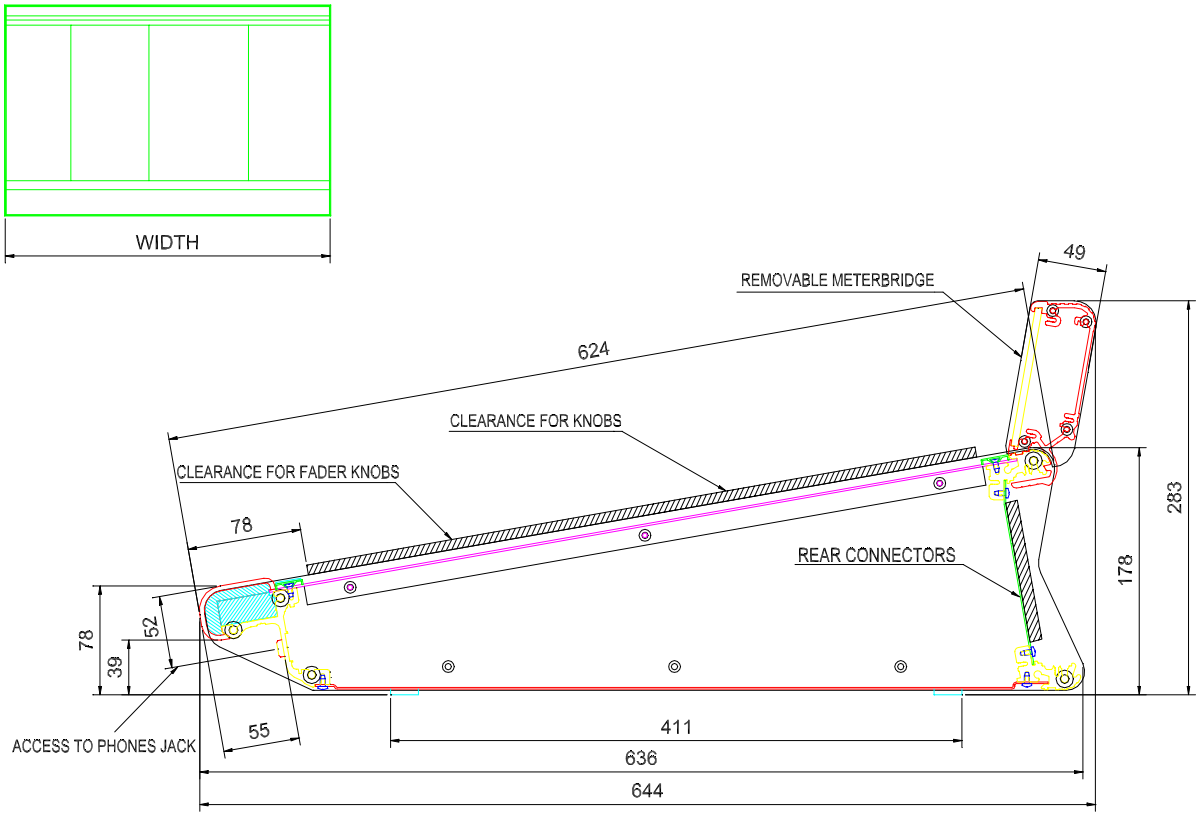
Always switch the power supply off before connecting or disconnecting the mixer DC power cable, removing or installing modules and servicing.

In the event of an electrical storm, or large mains voltage fluctuations, immediately switch off the Power Supply Unit and disconnect the mains plug from the wall socket.

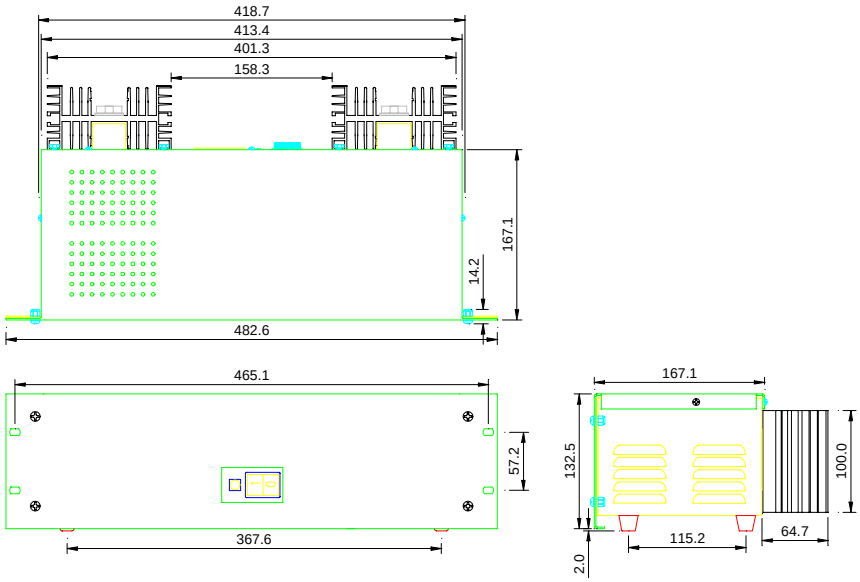
It is standard practice to turn connected power amplifiers down or off before switching the console on or off.

DIMENSIONS

Dimensions for installing the console and power supply unit are shown below:



RPS11 Power Supply



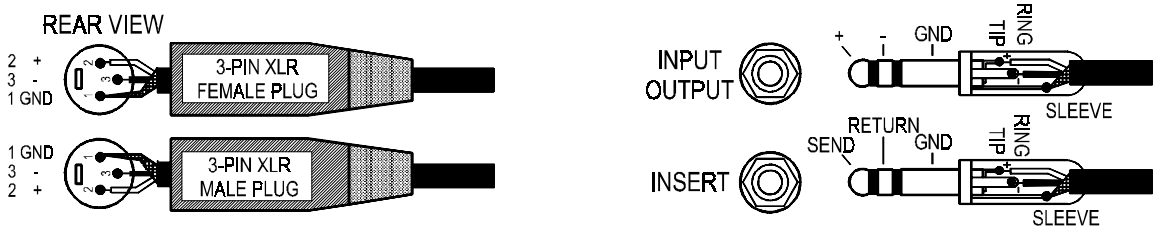
DIMENSIONS

	Unpacked				Packed			
	Width	depth	height	weight(kg)	Width	depth	height	weight(kg)
GS3000-824	1186	634	176	29	1995	830	330	38
GS3000-832	1481	634	176	37	1995	830	330	38
GS3000-M24 meterbridge	1174	56	106	4	1300	130	280	6
GS3000-M32 meterbridge	1469	56	106	5	1600	130	280	7
RPS11 power supply	483	232	135	10	575	270	170	11

CONNECTIONS

The **GS3000** uses professional grade 3-pin XLR, 1/4" TRS jack and RCA PHONO sockets. The applications diagrams in this guide illustrate typical equipment interconnections. To ensure best performance, we recommend that you use high quality audio cables and connectors, and take time to check for reliable and accurate cable assembly. It is well known that most audio system failures are due to faulty interconnecting leads.

CONNECTOR PINOUTS



CONNECTORS, CABLES AND THEORY

All input and output **XLR** connectors are 3-wire differentially or impedance balanced. These have 3 connector pins: pin 1 = ground 0V (cable screen), pin 2 = signal +, pin 3 = signal -.

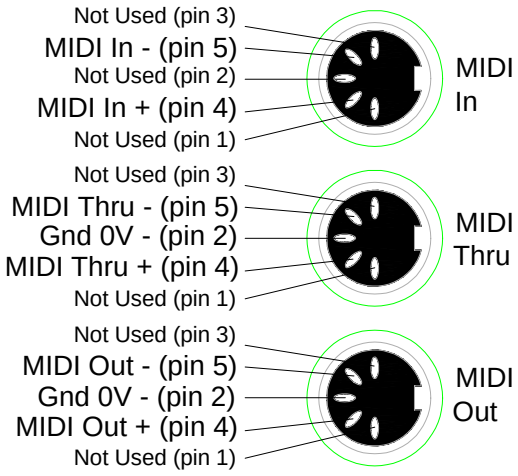
All the master output **jack** connectors (e.g. Tape out, Aux out, Studio out) are 3-wire impedance balanced. These outputs provide optimum interference rejection into the balanced inputs of connected equipment. **Jack** connectors have 3 terminals: tip = signal +, ring = signal -, sleeve = ground 0V (cable screen).

Avoid reversing + and - on balanced connections as this will result in out of phase signals (reverse polarity) causing signal cancellation effects. This situation is particularly common in multi-microphone mixing.

Where long cables runs are required, balanced interconnections should be used. Short interconnections between more affordable 2-wire (signal, ground) unbalanced effects units or signal processors and mixing console may be utilised.

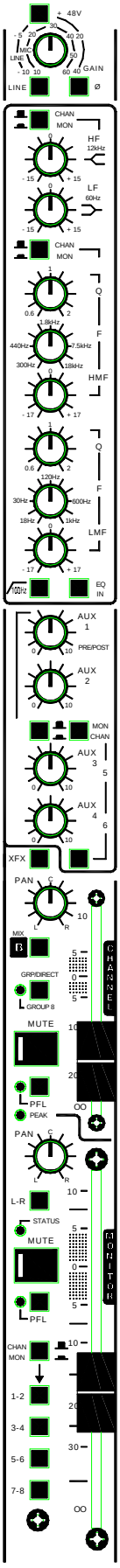
MIDI CONNECTIONS

Use high quality screened twist pair cable with the screen connected to pin 2 at both ends. The cable should be no longer than 15m (50') and terminated with 180º 5 pin male cable mount DIN plug.



Rear panel view

MONO INPUT/OUTPUT CHANNEL



The mono input/output (I/O) channels are designed using a very high quality analogue signal path to give the ultimate in high quality sound. The in-line format means that the recording and the monitor/mixdown path are both combined in the same channel. The recording signal path is known as the **channel** path and the monitor/mixdown path is known as the **monitor** path.

With no jack in the **TAPE IN** socket, the Mic/Line signal is normalled through the monitor path.

+48V –selects phantom power to the XLR input.

LINE –selects the **LINE** jack input on the rear connector panel and adjusts the input preamp for line level sensitivity. In the up position, the XLR input is selected. Both these inputs are balanced.

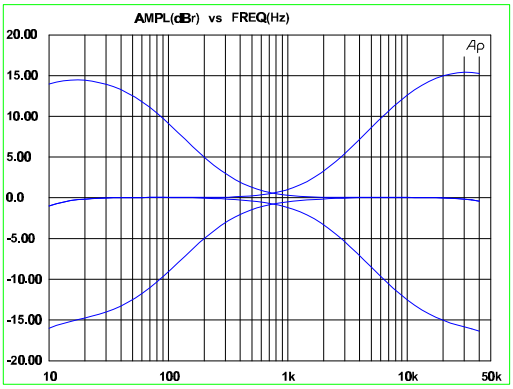
GAIN –Use this control to adjust the channel input sensitivity to match the connected source signal, -10 to -60dBu for Mic gain and +10 to -40dBu for Line gain. The console operating level (0dBu). Press the PFL switch to check the signal without affecting the main mix output.

Ø –reverses the polarity of the input signal to compensate for phase differences due to microphone placement or incorrect wiring of input cables.

INSERT – The **INSERT** point is fixed to be **PRE-EQ** and follows the **CHAN/MON** switching for the **HF/LF EQ**. i.e. if the **HF/LF EQ** is in the channel path so will the insert point. If the **HF/LF EQ** is switched to the monitor path the **INSERT** point will be in the monitor path.

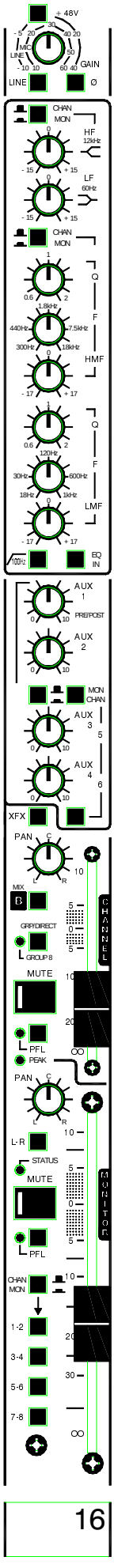
EQUALISER – The **EQ** consists of two separate sections; an **HF/LF** (High/Low frequency) section and a fully parametric **HMF/LMF** (High Mid/Low Mid frequency**)** section.

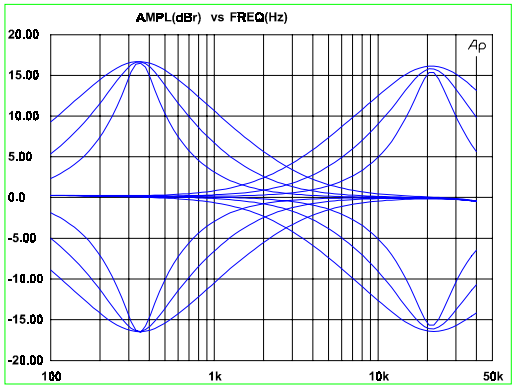
The **HF and LF** bands have a shelving response which means that all frequencies beyond the turning point frequency are affected, HF = 12kHz, LF = 60Hz. Used with the 100Hz lo-cut filter you can tailor the low frequency response exactly as you require. Each band may boost or cut by up to +/- 15dB. The centre flat position is detented for quick resetting. The **HF and LF** section is normally in the channel signal path, but can be switched into the monitor path by pressing the **CHAN/MON** switch.



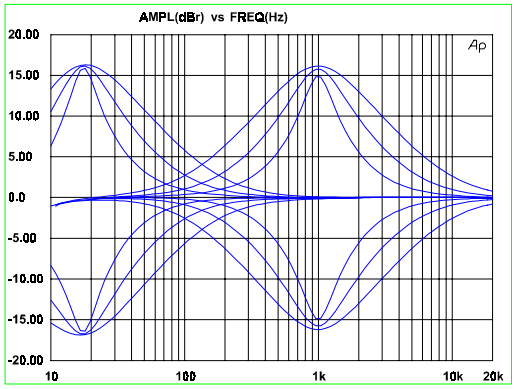
HF and LF EQ

The two fully parametric swept mid frequency bands **HMF and LMF** have a peak/dip (bell shaped) response which means that the maximum boost or cut occurs at the selected (centre) frequency. The centre frequency can be swept over a wide range: **HMF** = 300Hz to 18kHz, **LMF** = 18Hz to 1kHz. Each band may boost or cut by up to +/- 17dB. The centre flat position is detented for quick resetting. The **Q** control determines the broadness or sharpness of the EQ on the centre frequency and is continuously variable from 0.6 for subtle changes to 2 for narrow band correction or effect. Use the mids to add warmth or presence to the sound or to notch out problem resonances. The **HMF and LMF** section is normally in the channel signal path, but can be switched into the monitor path by pressing the **CHAN/MON** switch.



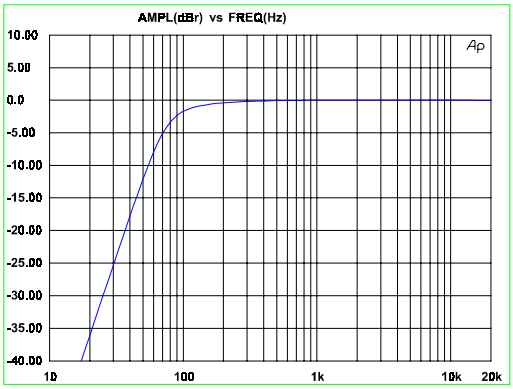


HMF EQ



LMF EQ

100Hz lo-cut filter – Attenuates frequencies below 100Hz to reduce low frequency source noise such as unwanted rumble. It can also be used to clean up sounds which do not have much bass content, such as vocals and cymbals.



100Hz lo-cut filter

EQ IN – Press to switch the EQ into the signal path. The switch affects both the HF/LF and HMF/LMF Equalisers.

AUXILIARY SENDS – A total of 6 aux busses are available. You can set up to 6 mixes using the 4 aux send controls.

Aux sends 1 & 2 can be switched either pre or post-fade using the **GLOBAL PRE/POST SELECT SWITCH.** This affects aux sends 1 & 2 for all input channels. Normally, effects sends are post-fade, so that the effect follows the fader level and cue feeds are Pre-Fade so that an independent mix can be sent to the musicians. The **MON/CHAN** switch sources Aux sends 1 & 2 from either the monitor signal path or the channel path.

Aux sends 3 & 4 are post-fade and can also be sourced from the channel signal path or the monitor path by selecting the **MON/CHAN** switch. Aux sends 3 & 4 can also be switched to aux busses 5 & 6 to expand the number of effects that can be used at the same time.

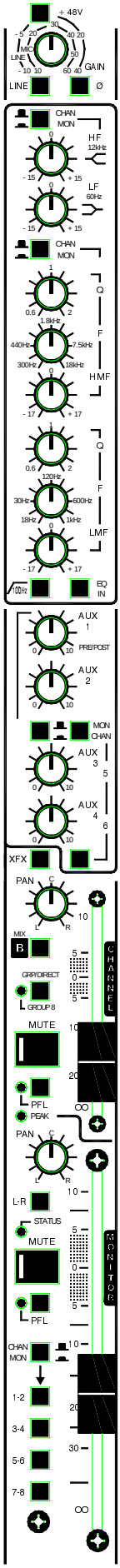
CHANNEL PATH

XFX (extra FX) – When mixing down, a separate post-fade stereo effects send can be created by pressing the **XFX** and **MIX B** switches along with the **MIX B** switch in one of the studio sections on the master panel. The output can be fed from the Studio output jack sockets to the effects unit.

PAN – positions the channel signal within the stereo image to MIX B when selected, or to the groups when the **CHAN/MON** switch above the routing switches is in the up position. Pan fully left to route the channel signal to the odd groups and right to route the channel signal to the even groups. The centre position (mono image) is detented for quick resetting.

MIX B – routes the channel signal to the Mix B stereo buss.

GRP/DIRECT – In the up position the post-fade channel signal (DIRECT) is sent to the multitrack. When pressed, the corresponding GROUP mix output



CHANNEL PATH

is sent to the tape multitrack input. Groups 1 to 8 are repeated across the console tape outputs e.g. group 1 is on Tape Out 1, 9, 17 & 25.

MUTE – This turns the channel signal on or off. This mute can be controlled by the automation system. This does not affect the Pre-Fade aux sends.

PFL – Press PFL (Pre-Fade Listen) to listen to the channel Pre-Fade signal on headphones or control room speakers. The signal level is shown on the L and R bargraph meters.

Channel fader – 60mm smooth action fader controls the overall channel level. All post-fade aux send levels in the channel path are dependent on the level of the channel fader.

PEAK – The peak detect circuit samples the signal at various points within the channel and monitor signal paths. The red LED illuminates when the signal is within 5dB of clipping. Should this occur turn back the GAIN control to reduce the signal level.

MONITOR PATH

PAN – positions the monitor signal within the stereo image to the L-R and group mix busses when they are selected. The centre position (mono image) is detented for quick resetting.

L-R – routes the monitor signal to the main stereo mix for monitoring during track laying or for mixdown to 2-track.

STATUS – This illuminates when the channel is set in record ready mode using the MIDI machine control function.

MUTE – This turns the monitor signal on or off. This mute can be controlled by the automation system. This does not affect the Pre-Fade aux sends.

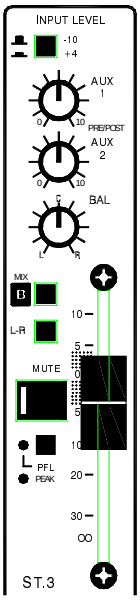
PFL – Press PFL (Pre-Fade Listen) to listen to the Pre-Fade signal on headphones or control room. The signal level is shown on the L and R bargraph meters.

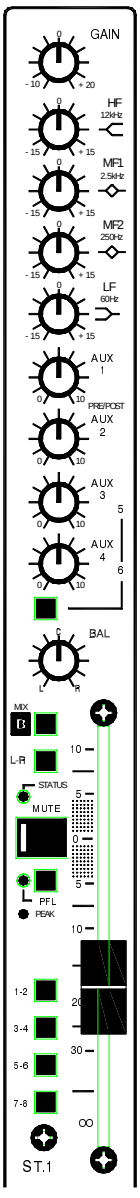
CHAN/MON – This is the group routing source select switch. Press to route the monitor signal to the group busses for subgrouping during mixdown. In the up position, the channel signal is routed to the groups for track laying.

1-2, 3-4, 5-6, 7-8 ROUTING SWITCHES – These switches route the signal to groups. Use the pan control to route to individual groups, i.e. pan L (left) for groups 1, 3, 5, 7 or and pan R (right) for groups 2, 4, 6, 8.

Monitor fader – 100mm smooth action fader controls the overall monitor level. All post-fade aux send levels in the monitor path are dependent on the level of the channel fader.

DUAL STEREO INPUT CHANNEL





DUAL STEREO INPUTS – Two dual stereo input channels are included as standard. Stereo inputs 1 & 2 are fully featured with 4-band EQ, full aux and group routing, automated mute and 100mm fader. They are ideal for stereo instruments and MIDI sequenced sources. Stereo inputs 3 & 4 are 'compact' stereo inputs again with automated muting, ideal for returning effects to the mix. The stereo channel inputs are on separate TRS jacks.

UPPER STEREO INPUT CHANNEL ST. 3 / 4

INPUT LEVEL -10/+4 – Input level matching from the stereo source can be switched from +4dBu (high level) to -10dBV (low level). Use **PFL** to check for correct level setting**.**

AUXILIARY SENDS – The Left and Right stereo input signals are summed to provide aux feeds in mono.

Aux sends 1 & 2 can be switched either pre or post-fade using the **GLOBAL PRE/POST SELECT SWITCH.** This affects aux sends 1 & 2 for all channels. Normally, effects sends are post-fade, so that the effect follows the fader level and cue feeds are Pre-Fade so that an independent mix can be sent to the musicians.

BAL – balances the stereo channel signal within the stereo image to **MIX B** and **L-R** when selected. If the source is mono then the **BAL** operates as a pan control. The centre position is detented for quick resetting.

MIX B – routes the channel signal to the **Mix B** stereo buss.

L-R – routes the channel signal to the main stereo mix.

MUTE – This turns the channel signal on or off. This mute can be controlled by the automation system. This does not affect the Pre-Fade aux sends.

PFL – Press **PFL** (Pre-Fade Listen) to listen to the channel Pre-Fade signal in stereo on headphones or control room speakers. The signal level is shown on the L and R bargraph meters.

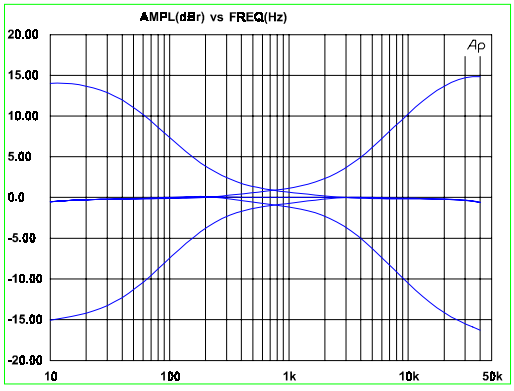
PEAK – The peak detect circuit samples the left and right signal in the channel signal path. The red LED illuminates when the signal is within 5dB of clipping. Should this occur check the -10/+4 switch is set correctly.

Channel fader – 60mm smooth action fader controls the overall stereo channel level. All post-fade aux send levels are dependent on the level of the fader.

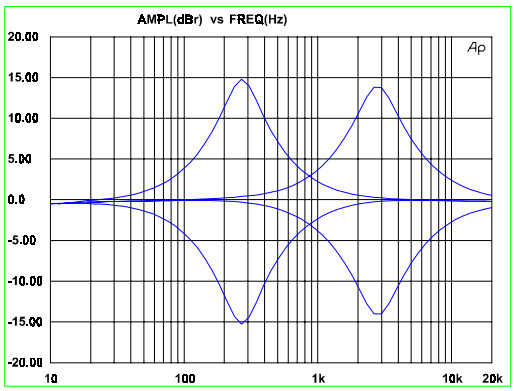
LOWER STEREO INPUT CHANNEL ST.1 / 2

GAIN – Use this control to adjust the channel input sensitivity to match the connected signal source (-20 to +10dBu) to the console operating level (0dBu). Press **PFL** to check the signal without affecting the main mix.

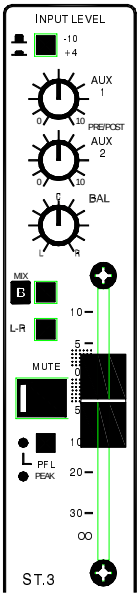
EQUALISER – Shelving **HF** and **LF** and two fixed frequency peak/dip mid controls **MF1** & **MF2** provide 15dB of boost or cut. Use the mids to add warmth or presence to the sound.

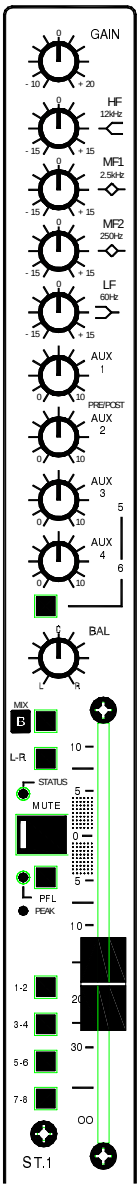


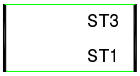
HF/LF EQ



MF1/MF2 EQ







AUXILIARY SENDS – The Left and Right stereo signals are summed to provide aux feeds in mono. You can set up to 6 mixes using the 4 aux send controls.

Aux sends 1 & 2 can be switched either pre or post-fade using the **GLOBAL PRE/POST SELECT SWITCH.** This affects aux sends 1 & 2 for all input channels. Normally, effects sends are post-fade, so that the effect follows the fader level and cue feeds are Pre-Fade so that an independent mix can be sent to the musicians.

Aux sends 3 & 4 are post-fade and post-mute. Aux sends 3 & 4 can also be switched to aux busses 5 & 6 to expand the number of effects that can be used at the same time.

BAL – balances the stereo channel signal within the stereo image to the **MIX B** or **L-R**. busses. The **BAL** control also feeds the channel signal to the odd groups (1, 3, 5, 7) and even groups (2, 4, 6, 8), when the routing switches are pressed. The centre position is detented for quick resetting.

MIX B – routes the channel signal to the **Mix B** stereo buss.
L-R – routes the channel signal to the main stereo mix.

STATUS – This LED indicator is reserved for later function.

MUTE – This turns the channel signal on or off. This mute can be controlled by the automation system. This does not affect the Pre-Fade aux sends.

PFL – Press PFL (Pre-Fade Listen) to listen to the channel Pre-Fade signal in stereo on headphones or control room speakers. The signal level is shown on the L and R bargraph meters.

PEAK – The peak detect circuit samples the Left and Right signal in the stereo signal path. The red LED illuminates when the signal is within 5dB of clipping. Should this occur turn back the GAIN control to reduce the signal level.

1-2, 3-4, 5-6, 7-8 ROUTING SWITCHES - These switches route the stereo signal to the groups. **BAL** adjusts the balance between left and right signals in the channel. For mono sources route the signals to individual groups by rotating fully left to route the signal to the odd groups and right to route the channel signal to the even groups.

Channel fader – 100mm smooth action fader controls the overall stereo channel level. All post-fade aux send levels are dependent on the level of the fader.

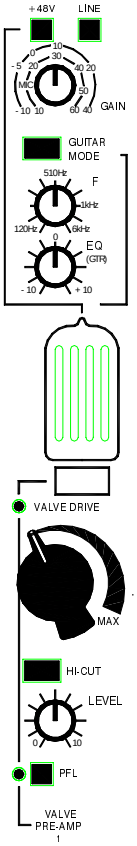
MIC / GUITAR VALVE INPUT

Two high quality patchable SVT (symmetrical valve technology) valve mic/line pre-amps are included in the master section. They have been designed to give a pleasing rich warm sound with a highly expressive high frequency response and subtle compression/soft clipping when driven with high signal levels. A valve 'drive' control, varies the amount of signal being amplified by the valve and a 3 colour LED indicator illuminates green when the signal level is greater than –15dB; yellow, when the signal level is greater than 0dB and red, when the signal level is greater than +15dB.

In mic/line amplifier mode, the double triode valve is configured differentially ('balanced' mode) in the circuit so that one triode is amplifying the positive half-cycle of the signal and the other triode is amplifying the negative. The advantages of this **symmetrical design** is that it maximises the characteristics of the valve, slightly compressing and then soft clipping both half-cycles equally, giving a more natural sounding, high gain, very low noise pre-amp. The 'soft clipping' characteristic ensures that only low order harmonics are produced when the amplifier is overdriven with a high transient peak signal.

With the push of a button the valve is configured as a guitar input stage, the valve is switched to be 'single ended' ('unbalanced' mode) which means that in true guitar amp fashion the signal is not balanced and the non-linear overdrive characteristics of the valve are utilised. This means that the positive half cycle of the guitar signal will distort differently to the negative half cycle when overdriven or 'cranked up to eleven' giving lovely rich second harmonic distortion sought after by guitarists.

The GTR EQ is tailored specifically to the frequency output of most guitar pickups and can be used to overdrive the valve at a certain frequency.
The input source, either Mic, Line or Guitar is plugged directly into the valve stage.



+48V – selects phantom power to the XLR input.

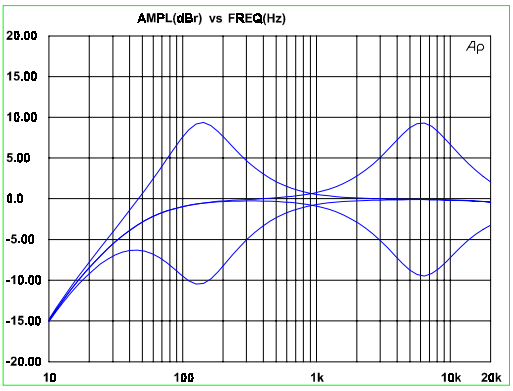
LINE – selects the **LINE** jack input on the rear connector panel and adjusts the input preamp for line level sensitivity. In the up position, the XLR **MIC** input is selected. Both these inputs are balanced.

GAIN – Use this control to adjust the input sensitivity to match the connected source (e.g. mic, line or guitar) to the console operating level (0dBu). Press the **PFL** switch to check that the signal reads an average '0' on the meters.

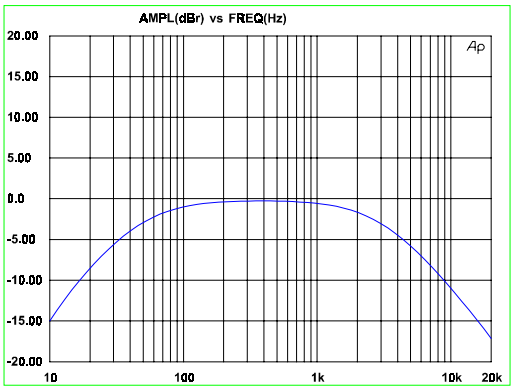
GUITAR MODE – selects the GUITAR input on the rear connector panel. This also configures the input for a very high impedance (Hi Z) suitable for direct connection of a guitar. A direct injection (DI) unit is not required.

EQ – This EQ only affects the signal when guitar mode is selected. It is tuned to guitar sound characteristics and is pre-valve so that the valve can be driven by the EQ. The swept mid frequency band has a peak/dip (bell shaped) response, which means that the maximum boost or cut occurs at the selected (centre) frequency. The centre frequency can be swept over a wide range (120Hz to 6kHz) and can boost or cut by up to +/- 10dB. The centre flat position is detented for quick resetting.

Guitar mode EQ frequency response



Guitar mode EQ



No EQ, HI-CUT filter in

Valve drive – Use this control to adjust the gain of the valve stage. This control can be used creatively to overdrive the valve circuit and produce rich second harmonic distortion sought after by many guitarists or the characteristic warm sound revered by vocalists.

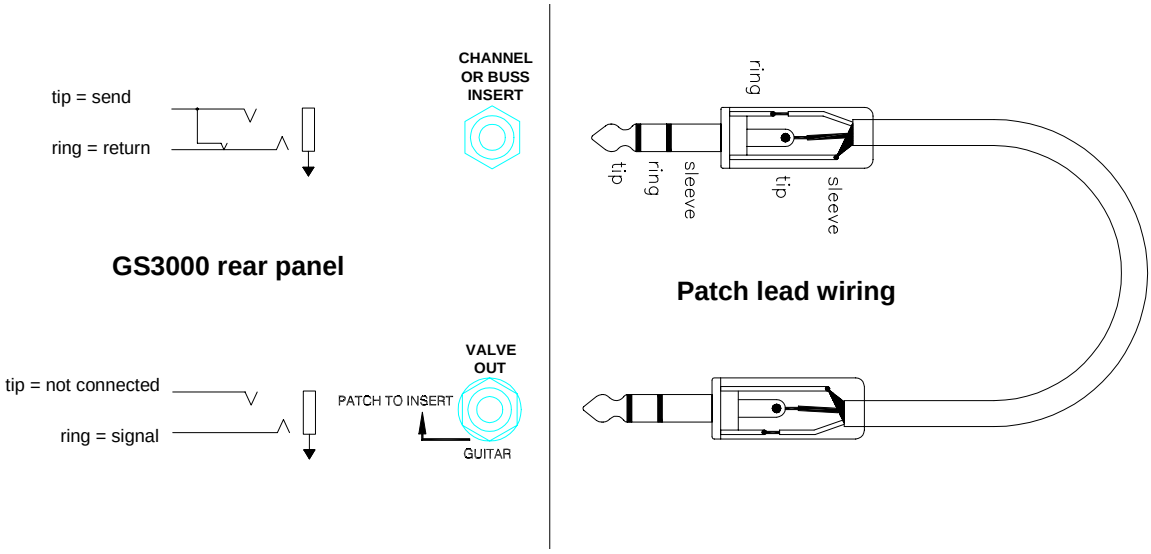
HI-CUT – Press this switch to remove harsh high frequencies produced when overdriving the valve circuit.

LEVEL – This control adjusts the output level from the **OUT** jack on the rear panel. Use this control to compensate for the high level when the valve is overdriven and to match the signal to the normal operating level of the channel it is patched into.

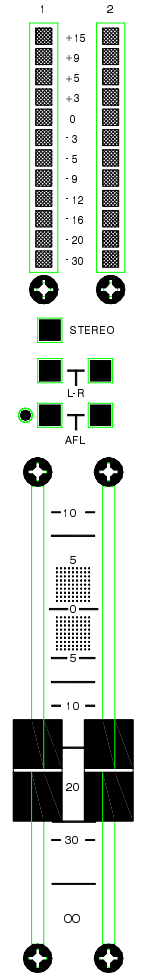
PFL – Press **PFL** (Pre-Fade Listen) to listen to the valve pre-output level signal on headphones or control room speakers. The signal level is shown on the L and R bargraph meters.

PATCHING THE VALVE OUTPUT

The output of the valve channel can be patched into any console **INSERT** using a standard TRS jack to jack lead.



GROUP/AUX OUTPUT



GROUPS

Groups allow up to 8 separate mixes to be created and recorded on the multitrack in addition to direct signals from the channels. Each group has a 12 segment bargraph peak reading meter, mono/stereo switching configuration, **AFL** monitoring and 100mm faders.

Sometimes it is necessary to control more than one channel simultaneously, for example a drum kit or a group of backing vocalists. This is known as subgrouping. Route the channels to groups instead of L-R, using the channel routing switches and pan controls. **PAN** selects the required group or positions the signal in the stereo image of a pair of groups.

It is normal to set up mono or stereo subgroups using the channel **PAN** controls and the group **L-R** and **STEREO** switches.

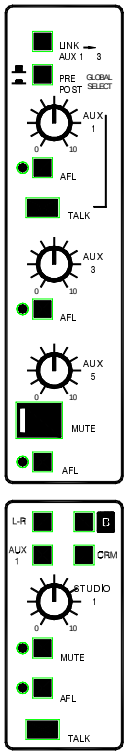
The post-fade signals of the groups may be fed to the main mix L & R busses as follows:

STEREO – In the up position the groups are routed in mono to L-R. Press this switch in association with the **L-R** switches below to separately route the group signal to the L or R mix busses, **L** routes the odd groups e.g. 1, 3, 5, 7 and **R** routes the even groups e.g. 2, 4, 6, 8. This provides a stereo subgroup to L-R.

L-R – press this switch to route to the L-R mix e.g. selecting the **L** (left) switch of the **L-R** switch pair and with the **STEREO** switch in the up position, the group signal will route to both left and right mix busses. With the **STEREO** switch pressed, the group signal will route to the left mix buss only.

AFL (After-Fade Listen) routes the post-fader signal to the L&R meters, the control room speakers and the headphones and allows checking of the sound quality and mix level. If the **STEREO** switch is pressed, the **AFL** signal will only be heard in the left or right channel only, depending on which group has **AFL** selected. Pressing a pair of **AFL** switches allows monitoring in stereo. If the **STEREO** switch is not selected then the same **AFL** signal will be heard in mono.

Group fader - 100mm smooth action fader controls the overall group level. The group outputs are routed via the **GRP/DIR** switches on the I/O channels to the channel Tape outputs. Note, groups 1 to 8 outputs are duplicated on the tape outputs of I/O channels 9-16 and also on channels 17-24 and 25-32. Thus group 1 output is on the **TAPE OUT** jacks of channels 1, 9, 17 and 25 when the **GRP/DIR** switch is pressed.



AUX MASTERS

Each aux mix has a master level control that adjusts the output level to match external equipment, or to trim the effects level without affecting the mix balance. The nominal output level is –2dBu with an extra +10dB of boost if required. Aux 1 & 2 are switchable pre/post-fade sends and 3, 4, 5 & 6 are post-fade for effects processing.

LINK – press this switch to route the aux 1 mix to aux 3, ideal for accessing a common effect unit such as a reverb unit from both the channel path and monitor path during mixdown.

PRE/POST GLOBAL SELECT – In the up position, the aux send is fed from the channel Pre-Fade aux mix. Press this switch to configure Aux 1 (2) as post-fade. Normally, effects sends are post-fade, so that the effect follows the fader level and cue feeds are Pre-Fade so that an independent mix can be sent to the musicians.

AUX – use this control to adjust the aux output level from off to +10dB.

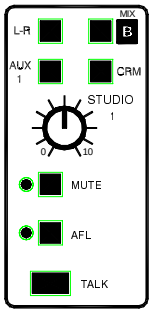
AFL (After-Fade Listen) routes the post aux mix signal to the L&R meters, the control room speakers and the headphones and allows checking of the sound quality and aux mix level. The same **AFL** signal will be heard in both channels.

TALK – press this momentary switch to talk to the aux mix using the built-in microphone.

MUTE - This turns the Aux 5 (6) mix signal on or off. This mute can be controlled by the automation system. This is very useful for automated effects muting.

STUDIO OUTPUTS

Studio feeds 1 & 2 are stereo sub-mixed outputs which normally feed speakers or a headphone ring in the studio providing foldback monitoring to the musicians. **Aux 1 (2)** can be set up as an independent foldback mix e.g. drum mix or vocal. **L-R** would be the same mix as the engineers monitor mix. Press **L-R** and **AUX 1 (2)** for a quick foldback mix created from L-R with selected signals boosted using AUX 1 (2) sends. The **CRM** mix follows the engineers monitor selection e.g. use this to playback a 2-track recording to the musicians in the studio. In mixdown, the studio outputs can be fed with a separate **MIX B** stereo post-fade mix for use as an extra stereo effects send – refer to channel XFX function.



L-R, MIX B, AUX 1, CRM – pressing one or a combination of the switches selects the source for the studio output. When more than one switch is pressed the sources mix together.

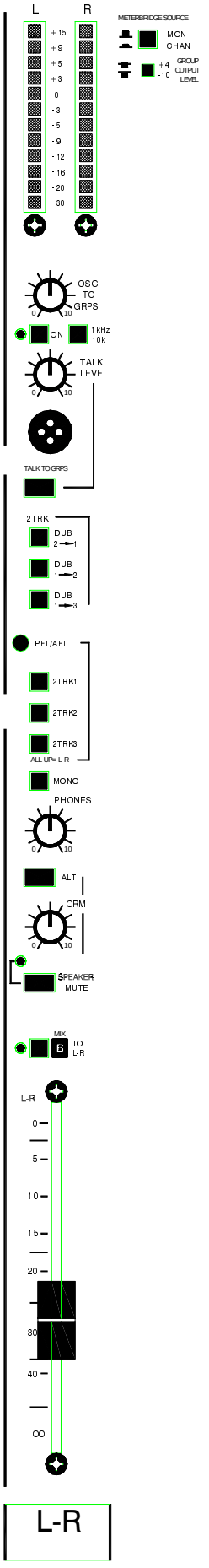
STUDIO – use this control to adjust the studio output level.

MUTE - This turns the studio output on or off. It is important to mute the studio speakers during recording or when studio microphones are live.

AFL (After-Fade Listen) routes the studio mix signal in stereo to the L&R bargraph meters, the control room speakers and the headphones and allows checking of the sound quality and mix level.

TALK - press this momentary switch to talk to the studio. If one or more of the source selection switches is pressed, then the talk signal will be combined with the selection. In this way you can communicate with the musicians and hear them via the studio microphones.

MASTER & MONITOR



L-R

The 12 segment L-R bargraph meters normally monitor the post-fade L-R mix or the two-track return depending on the position of the **2TRK1/2/3** switches. Pressing any **PFL/AFL** button on the console will override the monitor with the selected PFL/AFL signal. A large red PFL/AFL active LED indicator illuminates to warn when a **PFL** or **AFL** switch has been pressed.

Meterbridge source – if the optional meterbridge is fitted, press this switch to globally switch the meters to follow the channel small fader (tape out) signal path. When not selected the meters follow the monitor (tape in) signal path.

Group Output level – with the switch in the up position the nominal operating output level for the 8 groups is +4dBu (high level). If the switch is pressed using a pen tip or similar the nominal operating output level is –10dBV (low level). This is an underpanel switch to prevent accidental operation.

OSCILLATOR

The internal sinewave oscillator provides two fixed frequencies of 1kHz and 10kHz. The 1kHz is normally used for lining up the tape machine as the sinewave output is routed to the group outputs. With the osc switch **ON,** press **TALK TO GRPS** and adjust the group levels to check the line up of the connected multitrack tape machine.

The 10kHz sinewave can be used for setting the bias of an analogue tape machine, or for checking the HF response of connected equipment.

The above procedures can also be performed for the 2 track machines by pressing, **TALK TO GRPS** and then routing the signal via the group **L-R** switch and selecting the **2TRK** switches. Make sure the L-R meters read 0.

TALKBACK

A talkback mic is built into the front panel. Talkback buttons are located in various positions in the master section to enable the engineer to talk to a number of destinations; aux sends, mix busses, studio loudspeakers and foldback. The talkback signal can also be routed to the multitrack for recording take information on to tape. Press and hold these buttons for talkback. The control room speaker levels will be dimmed to prevent feedback. The **TALK LEVEL** controls the talkback mic input level.

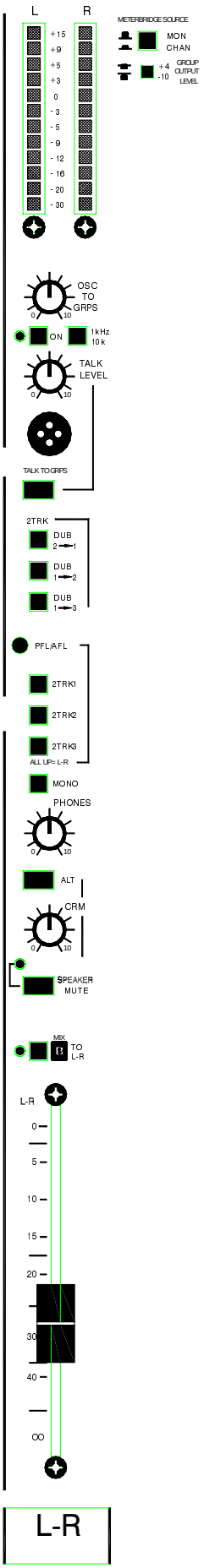
TWO TRACK MASTERING

Up to 3 two-track tape machines can be connected to the **GS3000** with full dubbing capability. The nominal operating level for Tape machine 1 (2TRK1) is +4dBu (high level) on rear panel XLR connectors and for Tape machines 2 & 3 (2TRK2 & 2TRK3) is -10dBV (low level) on phono connectors.
With the switches in the up position the L-R mix output is routed to all 3 Tape machines. This is the normal position for stereo recording.

DUB 2→1 – routes the playback output from Tape machine 2 to the inputs of Tape machine 1. This does not affect any other console mixing operation in progress.

DUB 1→2 – routes the playback output from Tape machine 1 to the inputs of Tape machine 2. This does not affect any other console mixing operation in progress.

DUB 1→3 – routes the playback output from Tape machine 1 to the inputs of Tape machine 3. This does not affect any other console mixing operation in progress.



CONTROL ROOM SELECTION

Three switches enable playback monitoring from each of the 3 tape machines.

With the switches in the up position the L-R mix output is the source.

2TRK1 – press this switch to listen to the playback from Tape machine 1.

2TRK2 – press this switch to listen to the playback from Tape machine 2.

2TRK3 – press this switch to listen to the playback from Tape machine 3.

The switch priority is 2TRK3 overrides 2TRK2 which overrides 2TRK1 which overrides the L-R mix output to the control room. Pressing any **AFL/PFL** button on the console will override the monitor with the selected AFL/PFL signal.

MONO – press this switch to combine the left and right signal. This is useful for checking mono compatibility. This does not affect the outputs to the tape machines or studio feeds.

PHONES - The headphone socket is located below the front armrest. Use stereo headphones with a nominal impedance of 30 to 600 ohms and adjust the **PHONES** control for a comfortable listening level.

ALT – switches between the main (reference) and alternate (domestic) monitor speakers. Useful to compare the mix between high quality studio monitor speakers and domestic Hi-Fi speakers.

CRM – controls the level of the selected control room speakers.

SPEAKER MUTE - switches off the signal to the selected control room speakers. This does not affect the headphone signal.

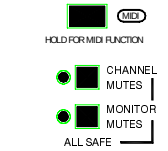
MAIN L-R OUTPUTS

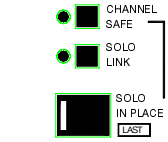
MIX B TO L-R – combines the mix on the stereo MIX B busses with the main L-R mix. This can be used during mixdown to expand the number of inputs to the mix by routing channel path inputs to mix B.

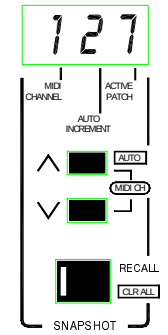
L-R FADER – a single 100mm fader adjusts the main L-R mix level. For best performance the faders should be operated around the '0' position for normal 'loud' level. If you find yourself operating significantly below '0' then the recorder or amplifier input is too sensitive for the console outputs. Simply turn down the recorder or amplifier level trim. If none is available then insert an attenuator pad between the console and connected equipment.

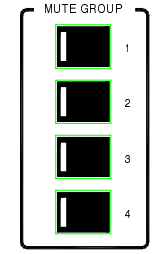
THE AUTOMATION SYSTEM

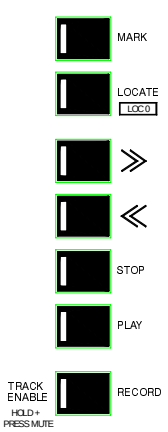
The **GS3000** has a comprehensive automation system capable of controlling all of the large mute switches on the console and also to remotely control the transport controls of an external machine such as a multitrack recorder, a hard disk recorder or a MIDI sequencer.











THE MUTE SYSTEM

The **GS3000** includes a 'soft' mute system controlled by an internal microprocessor which gives far greater control and versatility than the conventional systems found in other consoles. A ramped FET audio element in the audio path of each channel and monitor signal path provides silent muting under control of the microprocessor. The mutes on the stereo input channels and aux masters 5 & 6 are also controlled by the internal microprocessor. The red LED indicator in the mute switch always indicates the status of the channel (illuminated = muted, off = not muted).

Operational Features

MANUAL MUTING - Press a mute switch to turn a channel on or off. The switch cap illuminates if the channel is muted. You can also turn off (clear) or turn on (set) all the console mutes with a single key press.

4 MUTE GROUPS - Combine selected mutes under control of a master switch. Channel and monitor path mutes can be made 'ALL SAFE' so that they are not affected by the groups.

128 MUTE PATCHES - Store and recall the console mute settings in numbered patches. Includes 3 digit display, auto increment, channel and monitor 'ALL SAFE' function.

MIDI INTERFACE - IN, OUT and THRU sockets to interface with external sequencers, effects devices and control units. Includes MIDI machine control (MMC) to control the transport controls of multitracks, hard disk recorder, sequencer. MIDI dump to archive and recall console settings. MIDI note on/off messages associated with channel mutes.

SOLO-IN-PLACE - Check the contribution of individual signals within the main mix 'in place' by pressing the associated mute switches. Includes a separate 'SAFE' facility so that selected channels are not muted when solo is activated. The last solo setting can be recalled for instant comparison with the mix.

POWER UP AND POWER DOWN

The mute settings are remembered when power is removed from the console. A power down circuit detects falling voltage and writes the settings to non-volatile memory. On power up these settings are restored. The mute group, patch, solo safes, and mode settings are held in similar memory.

THE MUTE SWITCH

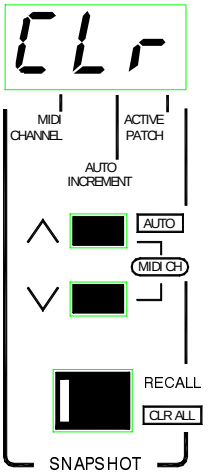
Press **MUTE** once to mute the audio signal.

The red LED indicator will turn on. The audio signal will turn off (channel muted). Mute affects the post-fade aux send signal.

Press **MUTE** again to turn the mute off.

TURN ALL CONSOLE MUTES OFF OR ON

It is often useful to turn off (clear) all the console mutes or to turn them on (set). You may wish to clear the console before starting a new scene or setting up a new group or patch. Alternatively you could set all mutes on and work with just the active channels. Once 'cleared' or 'set' in this way you can overwrite and edit selected groups and patches, or all 128 patches using the 'ALL' function as a starting point for a new show.



Turn All Console Mutes Off

Press the **SHIFT + RECALL** switches.

The red LED will start flashing.

The display flashes **CLr**

Press any other key to cancel

or

Press the **RECALL** switch to confirm.

The LED will turn off.

All console mutes will turn off.

Turn All Console Mutes On

Press the **SHIFT + RECALL** switches**.**

The red LED will start flashing.

The display flashes **CLr**

Press the **SHIFT + RECALL** switch again.

The display flashes **SEt**

Press any other key to cancel

or

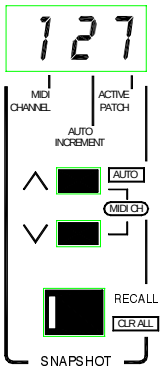
Press the **RECALL** switch to confirm.

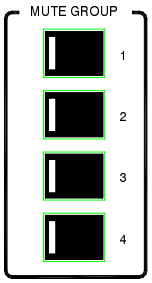
The LED will turn off.

All console mutes will turn on.

MUTE GROUPS

A mute group lets you mute a selected combination of channels with a single key press. Applications include muting unused channels when mixing different tracks, muting all effects, muting a group of instruments etc...
The **GS3000** includes 4 mute groups controlled by a bank of large buttons in the automation channel. Each of the 4 mute groups can be operated either on its own or in combination with the other three. When operated together, the mute groups effectively combine together. The mutes in the I/O channels and the mutes in the dual stereo input channels and aux sends 5 and 6 in the master section can be included in a mute group. Group settings can also be archived via MIDI.
Channel and/or monitor path mutes can be made 'ALL SAFE' to prevent them being affected by the mute groups. They can still be operated manually.





Program a Mute Group

Clear all console mutes.

Select the mutes to be saved in a mute group. i.e. Mute LEDs on.

Press the **STORE** switch.

The 4 MUTE GROUP switches and RECALL switch will start flashing.

Press the **MUTE GROUP** switch to be programmed.

The STORE and RECALL LEDs will turn off.

The MUTE GROUP LEDs will be cleared.

Recall a Mute Group

Press a **MUTE GROUP** (1 to 4) to turn the group on.

The red LED indicates that the group is selected.

The channels programmed into the group are muted.

Press **MUTE GROUP** again to turn the group off.

To Edit a Mute Group

Clear all console mutes.

Press the **MUTE GROUP** to be edited.

Press the **MUTE** switches to be edited.

Press the **STORE** switch.

The 4 MUTE GROUP switches and RECALL switch will start flashing.

Press the **MUTE GROUP** switch again.

The STORE and RECALL LEDs will turn off.

The MUTE GROUP LEDs will be cleared.

Factory default settings

The console is supplied with the mute groups cleared (mutes off).
This is the normal starting point for creating a new mute group.
Note that performing a hard reset restores the console to the factory default settings.

MUTE SAFES

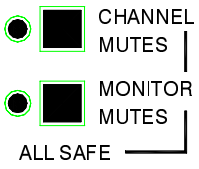
Console mutes are overwritten by mute groups, stored patches and MIDI mute data transmitted from an external controller. The **GS3000** includes a 'mute safes' facility to isolate specific groups of mutes so that they are unaffected by the automation system.

Mute safes can be selected in 3 distinct groups:

1. All monitor path mutes in the console I/O channels. This also includes the mutes in the stereo inputs and Aux sends 5 and 6 in the master section.
2. All channel path mutes in the console I/O channels.
3. Both together.

The mutes can still be operated manually.

These settings are automatically stored into non-volatile memory so that they are retained when power is removed. The safes setting can be archived via MIDI.
Note that the mute safes do not affect Solo-in-place which has its own safes facility described later.



To Make the Channel path Mutes 'Safe'.

Press the **CHANNEL MUTES** switch in the ALL SAFE section of the automation channel.

The LED indicator next to the CHANNEL MUTES switch will illuminate indicating that the channel path mutes are made ‘safe’.

Press the CHANNEL MUTES switch to remove them from **Mute Safe** function.

Press the MONITOR MUTES switch in the ALL SAFE section to make the monitor path mutes, the mutes in the stereo input channels and the mutes of aux sends 5 and 6 safe.

Press both switches to make all of the large mute switches safe.

MUTE PATCHES

A mute patch lets you store the console mute on/off settings. Mute patches can be recalled with a single key press. This is much like taking a 'snapshot' of the console settings. Mute patches are used extensively during mixdown. Patch changes can be linked to external sequencers and effects devices via MIDI for sophisticated mixdown control. Patches can be archived and recalled via MIDI.
The **GS3000** includes 128 mute patch memories. The patch number is simply set up on the 3 digit display and its contents recalled or overwritten with the current console settings. Recalling a patch does not overwrite any active **Mute Groups**. Channel and/or monitor path mutes may be made 'ALL SAFE' so that they are not affected by patch changes. Refer to the section on **MUTE SAFES** for details on how to isolate the mutes .
Before starting, decide how you want to use the mute patch system. Choose the recall operating mode with auto increment on or off.

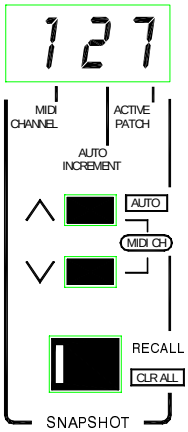
Select the Recall Mode

Press and hold the **SHIFT** switch.

Press the **AUTO** switch to toggle between auto increment on/off.

● Dot on = auto increment on

○ Dot off = auto increment off



AUTO INCREMENT ON

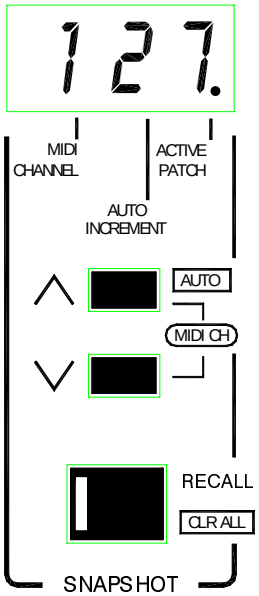
The display automatically increments to the next patch number each time the **RECALL** switch is pressed. This lets you step through your patches without having to press the ∧ or ∨ switches each time.

AUTO INCREMENT OFF

Press the ∧ or ∨ switches to the required patch and then press the **RECALL** switch to recall the patch shown in the display.

Factory default settings.
The console is supplied with all mute patches set (mutes on).
This is the normal starting point for creating mute snapshots where only active channels are on (not muted).
If you prefer to start with all patches cleared (mutes off) simply clear all console mutes and store to the ALL patch (see page 27).
Note that performing a hard reset restores the console to the factory default settings.

THE 3 DIGIT PATCH DISPLAY



Normal Mode

Shows selected patch number **0** to **127** or **ALL**

Indicates which patch will overwrite the console mutes when you press **RECALL**, or be overwritten when you press **STORE**. The **ACTIVE PATCH** dot tells you how the displayed number relates to the current console mute settings:

ACTIVE PATCH on :

Displayed patch is the last patch recalled. Console mutes are the same as the displayed patch (except for channels made 'safe').

ACTIVE PATCH off :

Displayed patch is the last patch recalled but console mutes have changed since the patch was recalled.

ACTIVE PATCH flashing :

Displayed patch is not the same as the last patch recalled. This is always the case in 'auto-increment' mode where the display automatically steps up ready for recall.

Clear or Set all Mutes

Flashes **CLr** or **SEt** to warn that all console mutes will be turned on or off when this function is selected.

MIDI Channel Number

The MIDI CHANNEL dot turns on to verify MIDI is selected. **.1 6**

The display indicates the console MIDI channel number selected. This can be channel **1** to **16** or **OFF**

Software Version Number

Refer to the section on TECHNICAL SUPPORT. **1.2 3**

Error Codes

Displays the error number and code. **E r 2** **E c 1**

Refer to the section on TECHNICAL SUPPORT.

Scroll Through the Patch Numbers

The 128 patches are numbered **0** to **127**. Before **0** there is a special patch called **ALL**. This is described later.

Press ∧ or ∨ to increment or decrement to the required patch number. Press and hold down ∧ or ∨ for fast scrolling to the required number.

The ACTIVE PATCH dot will indicate the status of the current console mutes against the selected patch number.

Store a Mute Patch

Select the mutes to be saved in a patch. i.e. Mute LEDs on.

Press ∧ or ∨ to the required patch number.

Press the **STORE** switch. The STORE LED will illuminate.

The 4 MUTE GROUP switches and RECALL switch will start flashing.

Press the **RECALL** switch to overwrite the patch.

The RECALL LED will flash once and the STORE LED will turn off.

The patch is now saved.

Recall a Mute Patch

Press ∧ or ∨ to the required patch number.

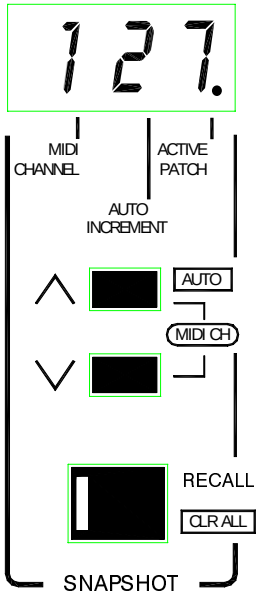
Press the **RECALL** switch to select the patch.

The ACTIVE PATCH LED will illuminate.

If a console mute is pressed then the ACTIVE PATCH LED will turn off as the console mutes are not the same as the stored patch.

If the ACTIVE PATCH LED flashes, then the patch number displayed is not the last patch recalled.

The ALL Patch



Between patch **127** and **0** is a special patch function called **ALL**.

This lets you overwrite all 128 patches with the current console mute settings. You would normally do this before programming the patches for a new recording session.

Typical applications would be:

Turn all mutes off in all patches (clear), then edit the mutes on for required channels.

Turn all mutes on in all patches (set), then edit the mutes off for required channels.

Turn unused channel mutes on before editing the used channels.

Turn mostly muted channel mutes on before editing the patches where they are not muted.

Note that the ALL function overwrites all 128 patches and should be used with care. A confirm function is included to prevent accidental operation.

Overwrite All 128 Patches

Operate the mutes to set up the console as required. You may wish to start by clearing or setting all mutes as described previously.

Press ∧ or ∨ until the **ALL** patch is displayed.

Press the **STORE** switch. The STORE LED will illuminate.

The 4 MUTE GROUP switches and RECALL switch will start flashing.

Press the **RECALL** switch. The RECALL switch flashes only.

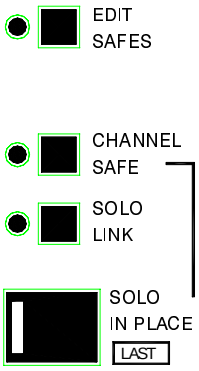
The STORE LED will flash.

Press the **RECALL** switch again to confirm the all patch overwrite.

The RECALL will flash once. The patch is now saved.

SOLO-IN-PLACE

Solo-in-place is a system for checking individual signals or combinations of signals in the mix. This is done by muting all channels except for the channel/s being soloed. It is known as 'solo-in-place' because the position and relative levels of the signal to all the outputs is retained. Solo-in-place affects the main outputs. This should not be confused with the PFL/AFL monitoring system, which affects only the monitor outputs. Solo-in-place is most useful during mixdown where you can listen to the contribution of individual signals to the mix.
The **GS3000** solo-in-place system lets you quickly solo selected channels. You can toggle between your last selected solo setting and the full mix to compare the two mixes. You can make selected channels 'solo safe' to prevent them being muted when solo-in-place is activated. Typically you would solo safe the effects returns so that the soloed channels are heard with effects. Selected mutes can be isolated (made safe) from solo-in-place using the EDIT SAFES function. Refer to the SOLO SAFES section.



Using Solo-in-place

Press the **SOLO-IN-PLACE** switch. The SOLO-IN-PLACE LED flashes.

Select the **MUTEs** of the channels you want to solo.

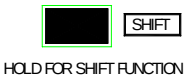
If a mute in the monitor path of the I/O channels is selected then all mutes in the monitor paths except for the selected monitor mute are turned on. Similarly, if a mute in the channel path of the I/O channels is selected then all mutes in the channel paths except for the selected channel mute are turned on. Press a mute in both paths and all console mutes are turned on except for the selected channels.

Any channel made 'solo safe' will not be affected.

You can turn on or off other mutes while in solo mode to hear the effect of combinations of channels.

Press the **SOLO-IN-PLACE** switch again to exit solo mode.

This returns the console to normal mute operation. The previous mute settings are restored.



Solo link

Press the **SOLO LINK** switch to combine the SOLO-IN-PLACE function in the monitor and channel paths of the I/O channels i.e. pressing a mute in either path will turn on all mutes.

Last Solo

Having set up a solo combination you may wish to compare the effect of this with the complete mix. Instead of having to repeat the selection of the channels as above you can recall your last solo combination. You can toggle repeatedly between this and the mix to judge the effect.

Press the **SHIFT + SOLO-IN-PLACE** switches.

The last solo combination is activated.

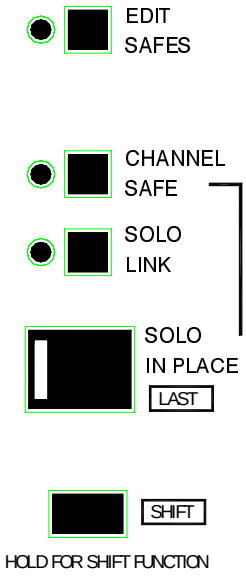
While holding **SHIFT**, press and release the **SOLO-IN-PLACE** switch.

This toggles between the last solo and the mix.

Release the **SHIFT** and **SOLO-IN-PLACE** switches to restore normal operation.

SOLO SAFES

Solo-in-place can mute all the console large mute switches which includes the monitor and channel path mutes in the I/O channels, the dual stereo input channels, aux sends 5 and 6. To hear the effect of soloed channels the required outputs should not be muted. You may also wish to always hear the effect of signal processing devices such as reverbs connected to the console aux sends and returns. Here, the aux sends and channels allocated as effects returns should not mute when solo is activated.
The **GS3000** includes a 'solo safe' facility so that selected mutes can be disabled from the solo system. This works in the same way as the 'mute safes' described earlier but affects solo and not the mute groups or patches. Setting up solo safes should be done before the recording or mixdown session. 'Solo safe' settings are retained on power off and can be archived via MIDI.



Make a Channel 'Solo Safe'

Press the **EDIT SAFES** switch. The EDIT SAFES LED and SOLO-IN-PLACE switch flashes.

All mutes will turn on except those already made SOLO SAFE.

Press the individual mute switches to be made safe.

Note: audio mutes are affected during SOLO SAFE editing.

Press the EDIT SAFES switch to exit 'solo safe' mode and return the console to normal operation.

or;

Press the SOLO-IN-PLACE switch to exit 'solo safe' mode and activate solo-in-place mode.

Channel safe

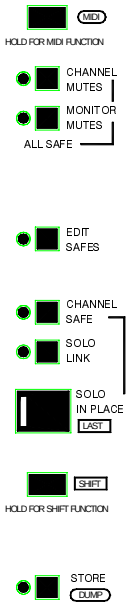
Press the **CHANNEL SAFE** switch to exclude the SOLO-IN-PLACE function from all channel path mutes of the I/O channels. This prevents accidental solo muting of the channels being recorded. The monitor mix can be soloed without affecting the recording.

MIDI

The Musical Instrument Digital Interface (MIDI) was originally conceived to standardise the interconnection between keyboards and other instruments. It is now found on all types of equipment including sound and lighting consoles, effects devices and computers. Sophisticated recording is now possible by interfacing sound consoles with other MIDI equipment.
The **GS3000** includes a full opto-isolated Musical Instrument Digital Interface (MIDI) system. Standard 5-pin IN, OUT, THRU DIN sockets allow connection to external MIDI equipment including computers, sequencers, data archiving systems, musical instruments and so on. The console mute system can control or be controlled using MIDI. Applications include sophisticated 'hands-off' mute control of effects, instrument patch control, and archiving of the mute settings for recall.
Pressing console mutes transmits MIDI Note On messages. Recalling patches transmits MIDI Program Change messages. Similarly receiving the MIDI Note On and Program change messages overwrites the console mutes and patches. The console mute memory can be dumped out or in using MIDI System Exclusive messages. The console can be set to operate on any MIDI channel and if required MIDI can also be disabled.

The MIDI Cables

Use high quality screened twisted pair cable with the screen connected to pin 2 at both ends. The cable should be no longer than 15m (50') and terminated with 180º 5pin male cable mount DIN plugs. MIDI cables are available from you local audio dealer or music shop. To control external equipment, connect the MIDI OUT of the console to the MIDI IN on the external equipment. To control the console, plug the MIDI OUT or THRU of the external equipment to the console MIDI IN. To pass MIDI through the console to the external equipment plug the console MIDI THRU to MIDI IN on the external equipment.



Select the Console MIDI Channel

Press and hold the **MIDI** switch to enter 'MIDI mode'.

The display **MIDI** dot turns on and the current MIDI channel number is shown.

While holding the **MIDI** switch, use the ∧ or ∨ switches to scroll through the MIDI channel numbers (i.e. 1 to 16)

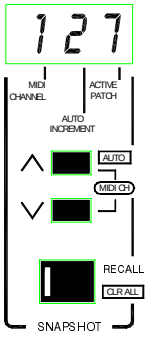
Release the **MIDI** switch when the desired MIDI channel number is displayed.

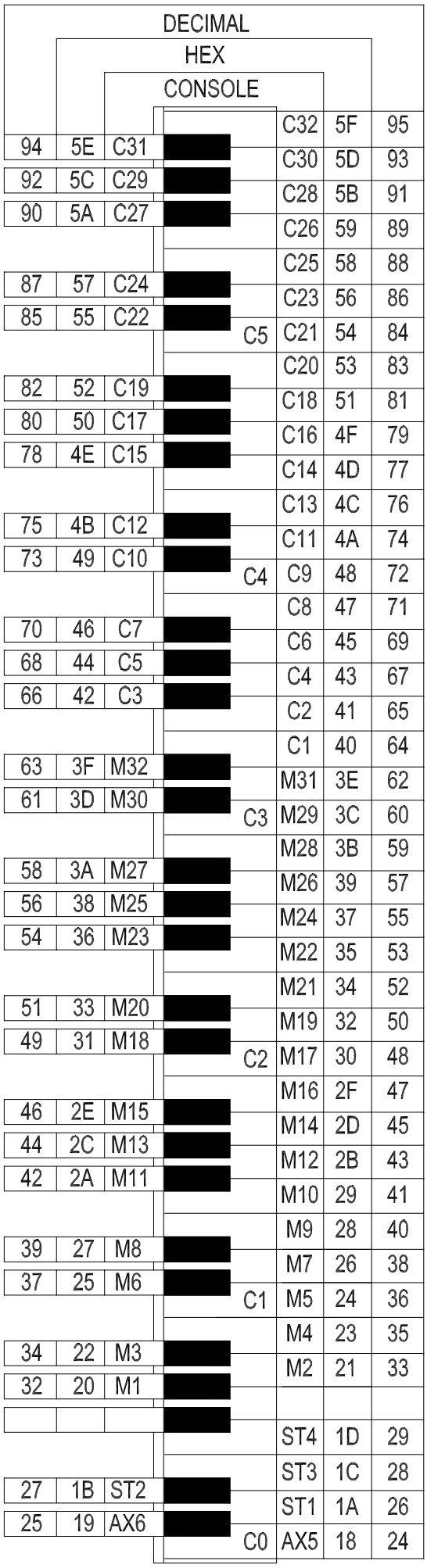
Disable the Console MIDI System

Press and hold the **MIDI** switch to enter 'MIDI mode'.

While holding the **MIDI** switch, use the ∧ or ∨ switches to scroll through the MIDI channel numbers until **OFF** is displayed

Release the **MIDI** switch to exit.





Channel Mutes

Pressing any console mute switch transmits a MIDI Note On message unless MIDI has been disabled. Similarly receiving the correct Note On message will control the channel mute unless it has been made 'mute safe' or MIDI disabled.

Console mutes are mapped to MIDI Note numbers as shown. Running status is supported on receive and transmit.

TRANSMIT - Pressing a console mute transmits the following Note On message:

9n cc vv cc 00

where n = console MIDI channel number
cc = console channel number
vv = 3FH for mute off, 7FH for mute on

RECEIVE - The console responds to the following MIDI Note On message :

9n cc vv (00 is ignored)

Mute Patches

Recalling a patch will transmit a MIDI Program Change message unless the MIDI is disabled. Similarly receiving the correct Program Change message will recall a console patch unless MIDI is disabled.

Console patches are directly mapped to MIDI Program Change numbers 0 to 127. Running status is supported on receive and transmit.

TRANSMIT and RECEIVE - The message format is :

Cn pp

where n = console MIDI channel number
pp = console patch number 0-127

MIDI Dump Format

The format for Dump In and Dump Out is identical. The Dump is made up of 128 System Exclusive messages (or packets) which contain the contents of the console memory.

TRANSMIT and RECEIVE - The format for a single packet is as follows :

F0 <sysex header> <packet no.> <data> <checksum> F7

<sysex header> = 00 00 1A 50 06 VV vv nn
VV = major software version number e.g. V1.23
vv = minor software version number e.g. V1.23
nn = console MIDI channel number
<packet no.> = packet number from 0 to 127
<data> = 7 bit block of console data followed by a number of 00 pad bytes.
<checksum> = checksum to allow error detection.

KEY
M = Monitor path mute.
C = Channel path mute.
ST = Stereo input mute.
AX = Aux send master mute.

MIDI Dump Data

When a MIDI DUMP OUT is performed the entire contents of the console memory is transmitted down the selected MIDI channel. This includes the current console mute settings, mute groups, patches, safe settings, solo settings, console modes, and console MIDI channel number. When a MIDI DUMP IN is received the console memory is completely overwritten.

This is ideal when you want to archive settings and recall them at a later date, for example a re-run of a previous mix. You can also use the dump facility to program other **GS3000** consoles.

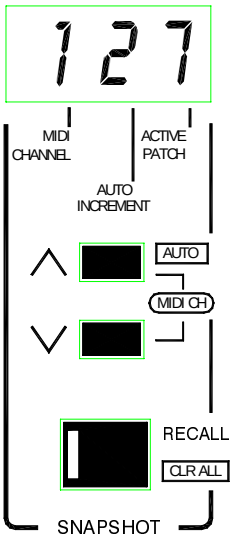
MIDI Dump Out

Press the **SHIFT + STORE** switches.

The dump is started down the selected console MIDI channel. If MIDI has been disabled (channel = OFF) then nothing will happen when dump is activated.

The display flashes **dPo** during the duration of the dump (around 15 seconds).

While dump is in progress the mute group and patch system is locked out. However, the channel mutes may be operated in the normal way so that manual operation may continue unaffected.



MIDI Dump In

The console responds automatically to the System Exclusive dump in message formatted as above.

While the console is receiving dump in data the display flashes **dPI** (around 10 seconds).

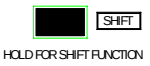
While dump is in progress the mute group and patch system is locked out. However, the channel mutes may be operated in the normal way so that live operation may continue unaffected.

On completion the console restores normal operation with the new memory settings in place.

Dump Errors

If the console or connected equipment fails to respond to a MIDI dump then check that the MIDI is correctly enabled on each. Check that the cables are correctly plugged. In the event of a data error being detected during a MIDI dump out or in the display will show an error message code. Refer to the section on TECHNICAL SUPPORT for an explanation of these.

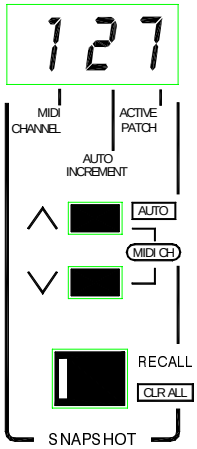
MIDI MACHINE CONTROL (MMC)



The transport controls located in the automation channel of the **GS3000** enables your multitrack tape machine, hard disk recorder, VTR or MIDI sequencer to be stopped, started, fast forwarded, rewound, marked and located and to record/replay from the console. The **GS3000** uses MIDI machine control via the MIDI connection.

MARK AND LOCATE

The mark and locate switches enable you to electronically mark a specific point on the tape or sequencer track and to quickly return to that position at the press of a switch.



To mark and locate a tape position.

Position the tape at the required point to be 'marked'.

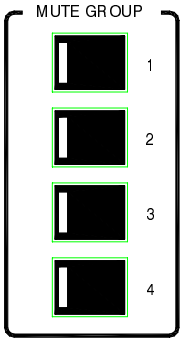
Press the **MARK** switch to register the specific location on the tape e.g. a "drop in" point.

When the tape has moved to a different position, press the **LOCATE** switch to move the tape to the 'marked' position on the tape.

LOC 0 Locate 0, press and hold the **SHIFT** switch and then press the **LOCATE** switch to rewind the tape to the 0 position of the tape i.e. usually the start of the tape.

RECORD READY

Individual tape tracks on the multitrack recorder or sequencer can be set into record ready state from the **GS3000** console.



To set tape tracks in record ready state.

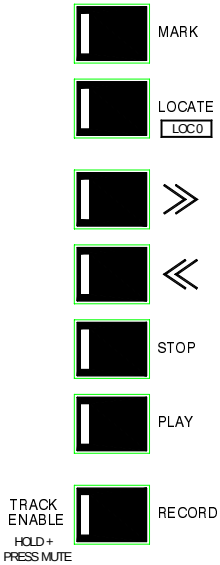
Press and hold the **RECORD** switch.

Press the **MUTE** switch on the required channel corresponding to the tape track e.g. press channel mute switches 1-8 to set tape tracks 1-8 in record ready state.

The STATUS LED indicator on each channel will illuminate to indicate the corresponding tape track is set record ready. Note; pressing either mute in the monitor or channel path will set the corresponding tape track in record ready state. The audio mutes are unaffected.

Release the **RECORD** switch when all required tape tracks have been set.

To deselect tape tracks in record ready state, press and hold the **RECORD** switch and press the **MUTE** switch to deselect the tape track corresponding to the console channel.



To record tape tracks.

Having set all the required tracks in record ready mode, press and hold the **RECORD** switch and then press the **PLAY** switch.

To stop recording, press the **STOP** switch.

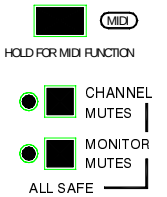
If the PLAY switch is pressed again during a record sequence, the tape machine will immediately dropped out of record and into play.

TECHNICAL SUPPORT

Should you have any queries about the **GS3000** console automation system please quote the console model, serial number and software version number in any communication with Allen & Heath or appointed service agent. If a problem is encountered, check first that external equipment is correctly connected and functioning as intended (or disconnected to test the console itself). Check the console has been correctly set up, and that the mains power is correct for the power unit. Software error detection systems have been built in to assist with problem investigation. Refer to the section on Error Messages.

Power Up and Power Down

The console settings are remembered when power is removed from the console. A power down circuit detects falling voltage and writes the settings to non-volatile memory. On power up these settings are restored. Mains power fluctuations ('brown-outs') are detected with error code readout.

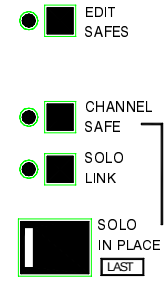


Software Version Number

Press the **SHIFT + MIDI** switches together.

The software version number is shown on the patch display. For example, **1.23** is version V1.23

Release the keys to return to normal display.



Soft Reset

Should the system lock up and fail to clear itself first press the underpanel **RESET** switch below the MIDI sockets on the rear panel. This restarts the processor as if the console was powered off and then on, except that the console may not reset to the last active mute settings.

> Make sure the reset switch is returned to the normal out position to restore normal operation. If left pressed, the console is held in reset mode and the automation will remain locked.

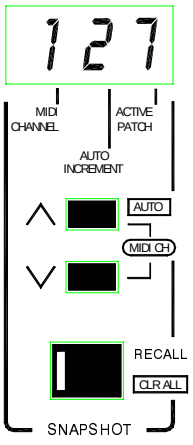
Hard Reset

Should the console memory become corrupted, it can be reset to the factory defaults by performing a hard reset :

Press and hold the **EDIT SAFES + STORE** switches while powering up the console. The following default condition is reset :

All console mutes turned on.

3 digit display shows **0**



All mute patches set (mutes turned on).

All mute groups cleared (mutes turned off).

MIDI channel set to **16.**

No mute safes set.

No solo safes set.

ERROR MESSAGES

In the event of an automation error an error message is displayed. This is a two part message comprising an error number and an error code. For example, should a MIDI Dump In error be detected the following error number will be displayed:

En0

Press any automation key to show the error code, which gives further information about the error.

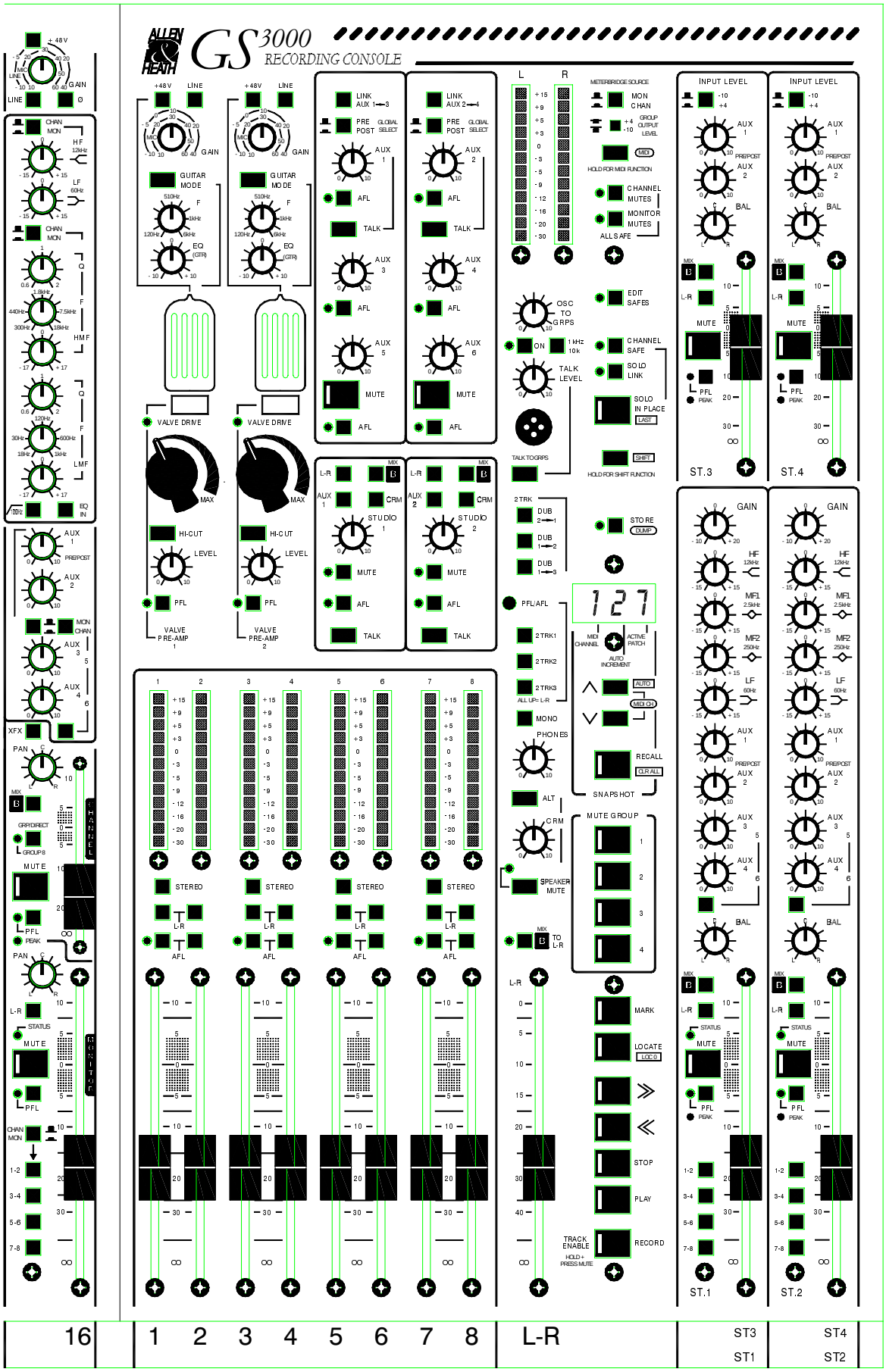
Ec1

Press any automation key to clear the error display and return the system to normal operation.

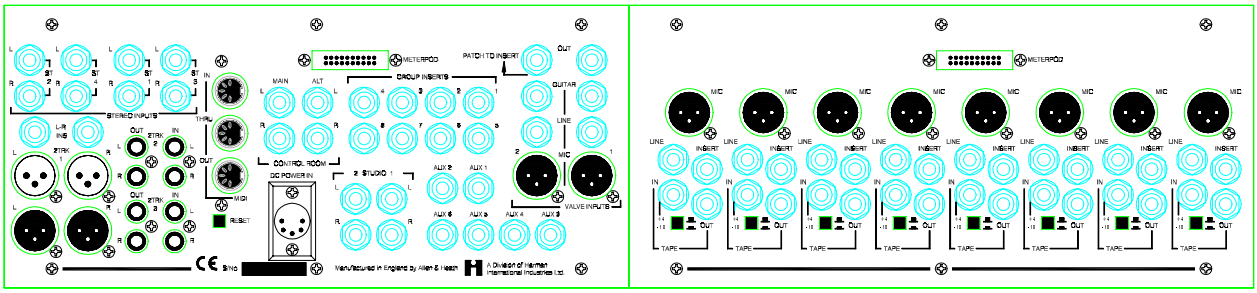
The following error messages apply:

ERROR NUMBER (n)	ERROR CODE (C)	DESCRIPTION
0	Press RECALL	MIDI Dump In error
	0	Packet 0 not received
	1	Missing packet
	2	Buffer overflow
	3	Checksum error
	4	Dump timeout
1	Press RECALL	EEPROM memory access error
	0	Write error
	1	Page write error
	2	Read error
	3	Page read error
	4	Byte read error
2	Press RECALL	Power brown-out detected

FRONT PANEL LAYOUT



REAR PANEL LAYOUT



SPECIFICATIONS

0 dBu = 0.775 Volts rms 0 dBV = 1 Volt rms

HEADROOM: ..... +21dB

MAX OUTPUT:..... ……21dBu 2kohm max load

METERS: Groups 1-8, L, R .....peak reading 12 bar LED

PEAK LEDs: ..... Turn on 5dB before clipping

FREQUENCY RESPONSE referred to 1kHz at +4dBu:
Any input to any output..... 20Hz to 20kHz +0/-0.5dB

DISTORTION: THD+Noise at +14dBu 1kHz
Mic in to L-R output, 40dB gain.....0.006%
Line in to L-R output, 0dB gain 0.006%

CMRR
Mic in, 40dB gain at 1kHz..... >80dB

CROSSTALK: Referred to driven channel at 1kHz
Adjacent channel ..... <-100dB
Channel fader off ..... <-90dB
Channel mute on..... <-75dB
Channel Pan pot isolation ..... < -72dB

NOISE: Measured rms 22Hz to 22kHz bandwidth
Mic input EIN (150 ohm source) .....<-128dB
Line preamp, 0dB gain .....<-93dBu
LR output residual noise..... <-98dBu (102dB S/N)
LR faders unity mix noise..... <-90dBu (94dB S/N)
LR mix noise (16 channels routed)..... <-86dBu (90dB S/N)
LR mix noise (24 channels routed).....<-80dBu

POWER SUPPLY: ..... RPS11 3U x 19" rack mount
AC Mains input:..... IEC socket with lead supplied
.....100 to 240V AC @ 50/60Hz
.....set with 4 position fuse insert
Power consumption:..... 250W max
Mains Fuse rating:.....100-120V AC T5A 20mm
.....220-240V AC T3.15A 20mm
DC outputs.....±16V @ 5A max, +48V @ 150mA max

CONNECTIONS

INPUTS:

Mic in	XLR	pin 2 +, 3 -, balanced	2k ohm	variable	-60 to +10dBu
Line in	TRS jack	tip +, ring -, balanced	15k ohm	variable	-10 to -40dBu
Stereo in (3,4)	TRS jack (L,R)	tip +, ring -, balanced	>15k ohm	variable	-20 to +10dBu
Stereo in (1,2)	TRS jack	tip +, ring -, balanced	>15k ohm	+4dBu / -10dBV switchable	
Tape in	TRS jack	tip +, ring -, balanced	22k ohm	+4dBu / -10dBV switchable	
Valve Mic	TRS jack	tip +, ring -, balanced	2k ohm	variable	-60 to +10dBu
Valve Line in	TRS jack	tip +, ring -, balanced	15k ohm	variable	-10 to -40dBu
Valve Guitar in	TRS jack	tip +, sleeve gnd, unbalanced	470k ohm	variable	+10 to -50dBu
2-Track 1 in	XLR	pin 2 +, 3 -, balanced	>10k ohm	+4dBu	
2-Track 2&3 in	RCA PHONO	unbalanced	>10k ohm	-10dBV	

INSERTS:

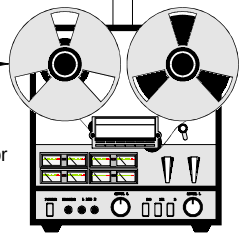
Chan, groups, L-R	TRS jack	tip send, ring return, unbal	<75 ohm, >7k ohm	-2dBu

OUTPUTS:

Direct (Tape) out	TRS jack	tip +, ring -, impedance balanced	<75 ohm	-2dBu
Groups (Tape) out	TRS jack	tip +, ring -, impedance balanced	<75 ohm	+4dBu / -10dBV switchable
Valve out (½ patch)	TRS jack	ring +, tip not used, unbalanced	<75 ohm	-2dBu
Aux out	TRS jack	tip +, ring -, impedance balanced	<75 ohm	-2dBu
2- Track 1 out	XLR	pin 2 +, 3 -, ground compensated	<75 ohm	+4dBu
2-Track 2&3 out	RCA PHONO	unbalanced	<75 ohm	-10dBV
Studio outputs	TRS jack	tip +, ring -, impedance balanced	<75 ohm	-2dBu
Control room outputs	TRS jack	tip +, ring -, impedance balanced	<75 ohm	-2dBu
Phones out	TRS jack	tip left, ring right	for stereo headphones 30 to 600 ohms	

MULTITRACKING

SOURCES



stripe tape with timecode

or

L R

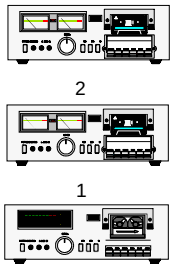
to stereo input or
2 I/O channels
panned L & R

MIC input

Monitor

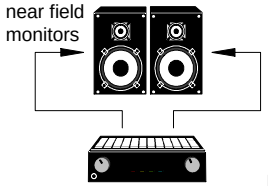
Record

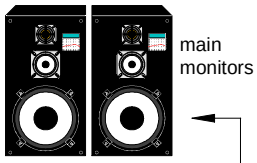
MMC
transport
control



Dubbing can be performed
without affecting any other
console operation.

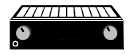
CONTROL ROOM





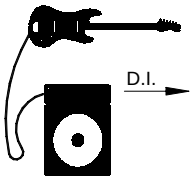
CRM ALT

Engineers
Headphones

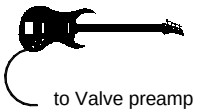


CRM MAIN

phones socket
under armrest



to line
input



to Valve preamp
Guitar input
(No D.I. required)

Tape
in

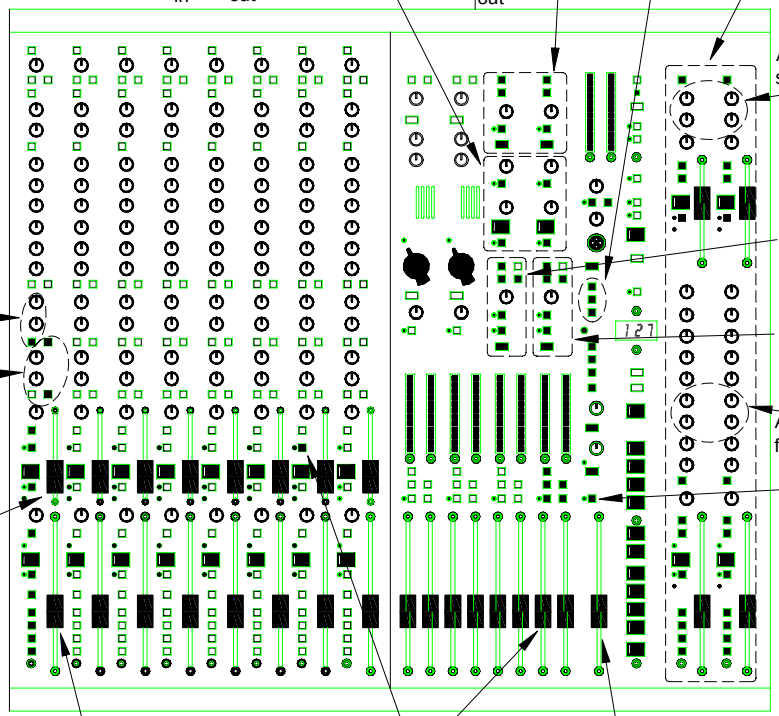
Tape
out

Aux 3 to 6
to Fx units

MIDI
out

Aux 1 & 2
studio
foldback

Fx returns on
stereo input
channels



Aux 1 & 2
studio foldback

Studio 1
cue
headphones

Studio 2
speaker
playback

Aux 1 & 2
foldback

MIX B off

Aux Send 1&2
prefade for foldback

Aux Send 3 to 6
postfade for effects

CHANNEL PATH

Recording level
(to tape)

MONITOR PATH

Monitor level
(from tape)

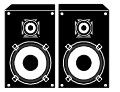
Group from channels
e.g. drums
(send to tape)

L-R mix =
monitor mix

STUDIO

STUDIO 1

Studio monitors



Cue Headphone ring

STUDIO 2

Musicians foldback

AUX 1

AUX 2

EFFECTS & SIGNAL PROCESSORS

FX 1

from console
INSERT point

Floating EFFECT

FX 2

from console
INSERT point

Floating EFFECT

FX 3

AUX 3

return to stereo
input channels

FX 4

AUX 4

return to stereo
input channels

FX 5

AUX 5

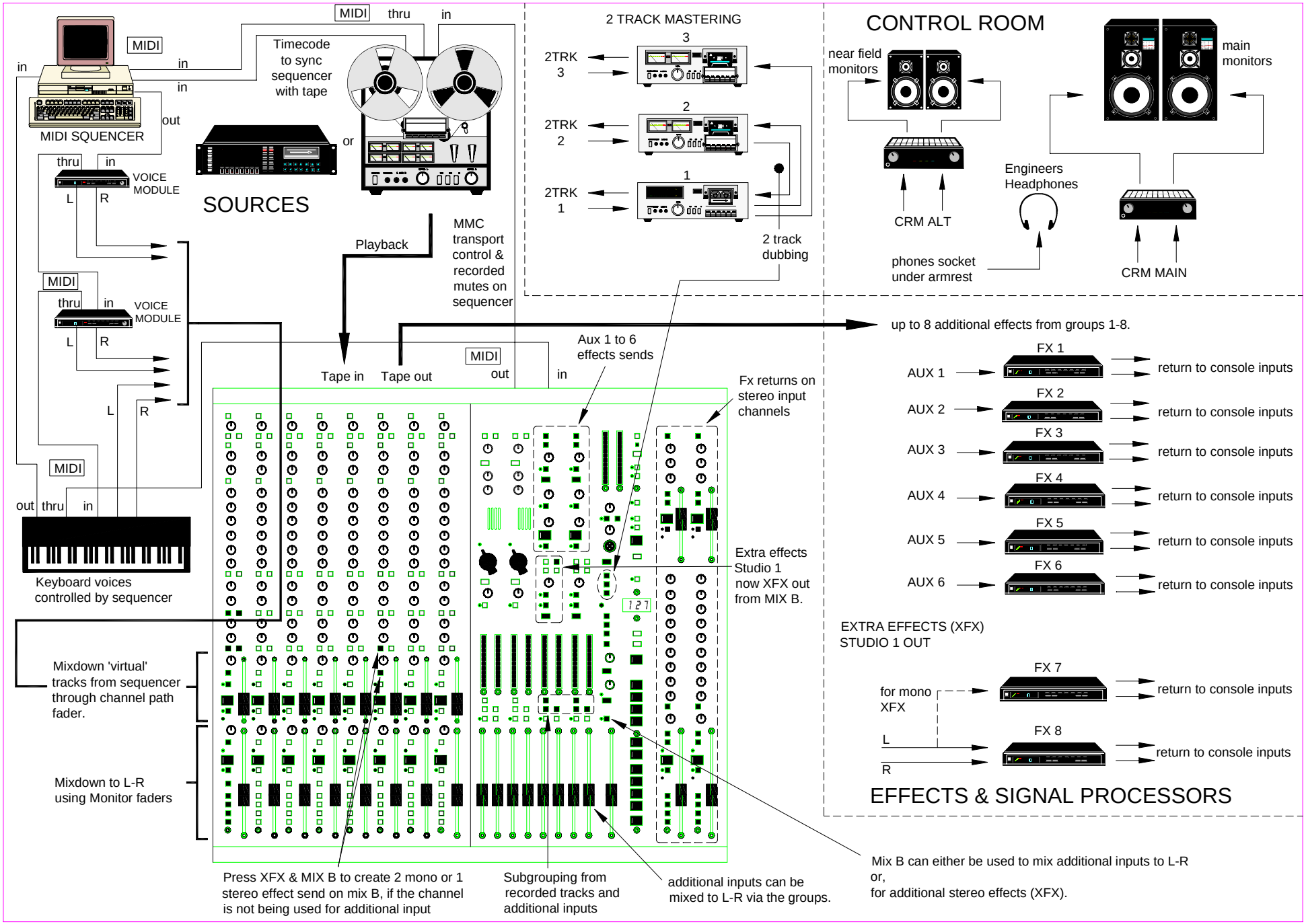
return to stereo
input channels

FX 6

AUX 6

return to stereo
input channels

MIXDOWN


MIDI
thru
in
Timecode to sync sequencer with tape
MIDI SQUENCER
out
or
SOURCES
VOICE MODULE
L
R
Playback
MMC transport control & recorded mutes on sequencer
2 TRACK MASTERING
3
2TRK 3
2
2TRK 2
1
2TRK 1
2 track dubbing
CONTROL ROOM
near field monitors
main monitors
CRM ALT
Engineers Headphones
phones socket under armrest
CRM MAIN
Tape in
Tape out
Aux 1 to 6 effects sends
Fx returns on stereo input channels
up to 8 additional effects from groups 1-8.
FX 1
AUX 1
return to console inputs
FX 2
AUX 2
FX 3
AUX 3
FX 4
AUX 4
FX 5
AUX 5
FX 6
AUX 6
Keyboard voices controlled by sequencer
Extra effects Studio 1 now XFX out from MIX B.
EXTRA EFFECTS (XFX) STUDIO 1 OUT
for mono XFX
FX 7
FX 8
Mixdown 'virtual' tracks from sequencer through channel path fader.
Mixdown to L-R using Monitor faders
EFFECTS & SIGNAL PROCESSORS
Press XFX & MIX B to create 2 mono or 1 stereo effect send on mix B, if the channel is not being used for additional input
Subgrouping from recorded tracks and additional inputs
additional inputs can be mixed to L-R via the groups.
Mix B can either be used to mix additional inputs to L-R or,
for additional stereo effects (XFX).

GS3000 SYSTEM BLOCK DIAGRAM